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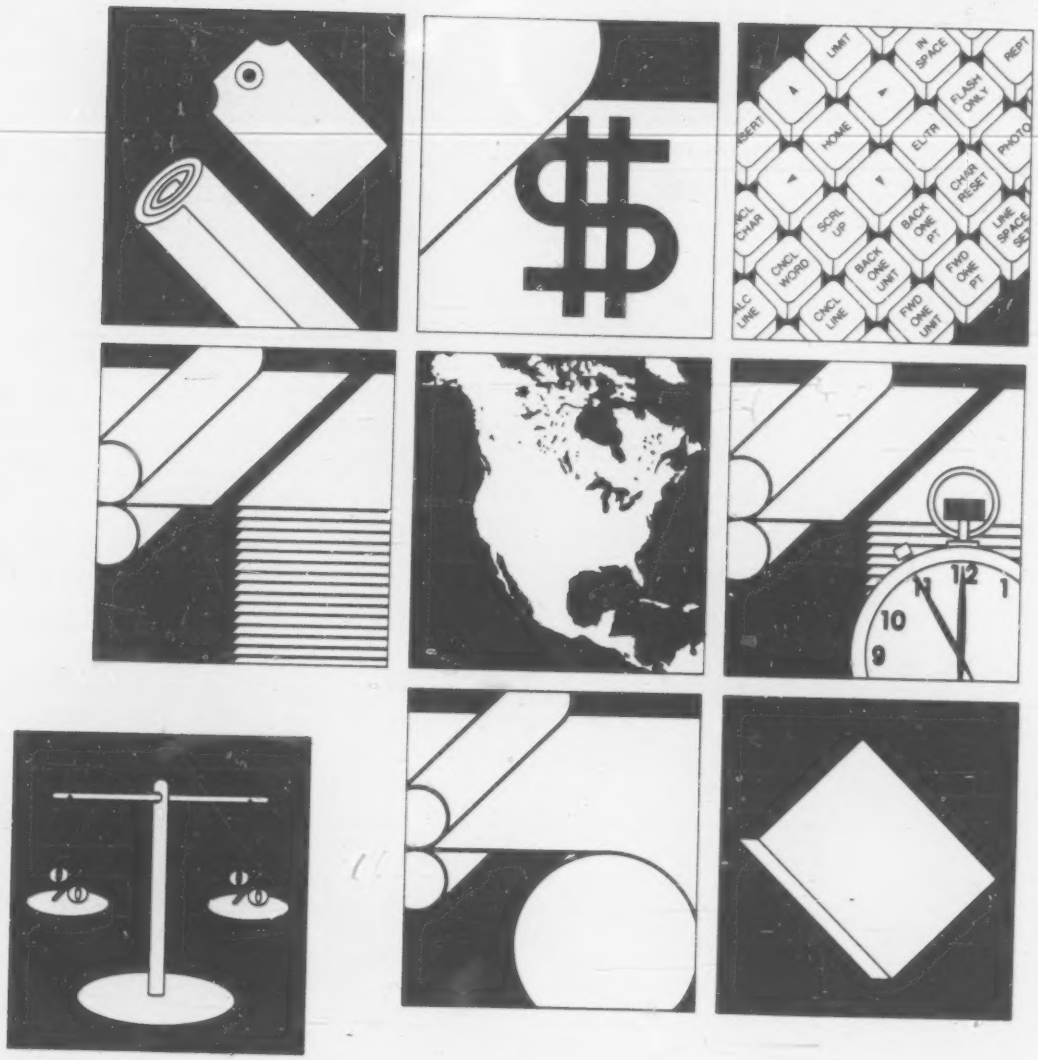
PIA INC

FINANCIAL SERVICES

1985 Financial Ratio Study



Volume I

1985 MANAGEMENT GUIDE TO THE PIA RATIO STUDIES

ABOUT PIA...

Printing Industries of America, Inc., is a federation of national, regional, state, and city associations composed of over 12,000 graphic arts firms. PIA and its affiliated associations comprise the largest trade association in the world dedicated to serving the interests of the graphic arts community. Membership in one of PIA's Affiliated Associations automatically entitles an organization PIA membership.

PIA's Financial Services offers the following products and services:

- PrintFinance: PIA in conjunction with Merrill Lynch brings you an innovative, comprehensive financial package called PrintFinance, available only from PIA Financial Services. PrintFinance is a unique competitively priced financial services package developed especially for the printing industry and allied graphic arts firms.
- The Annual PIA Financial Ratio Study - A Multinational Financial Survey
- Money Manager - A Monthly Financial newsletter with an exclusive print activity forecast: PrintOutlook
- Reprints of "Economics and Financial Management" articles from issues of PIA Management News
- Financial Management/Investment Banking Seminars
- Production Profit Target Program: production guidelines for sheetfed presses, web presses, bindery, and prepress equipment

For further information, contact:

PIA Financial Services
1730 North Lynn Street
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PIA's Education and Publication Services is active in financial management, offering numerous publications on the subject:

- Best & Worst Markets for Printers in the 1980's (a unique marketing and financial planning aid, available by subscription directly from PIA)
- Cost Accounting for the Job Order Printer
- Graphic Arts Estimating, Volume I
- Money Making Guide to Printing Estimating, revised edition
- Running in the Black: Six Steps to Managing Printing Profitability
- Sales Compensation in the Printing Industry - 1983
- Simplified Cost System
- Tax Planning for Your Graphic Arts Business
- Understanding Value Added
- Value Added Financial Management: A Guide for Printers
- 1981–82 Production Management Compensation Survey
- 1983 Survey of Sales Management: Practices and Compensation

Members may obtain these books through their PIA Affiliated Associations' Graphic Arts Bookstores, or by calling 1-800/PIA-DATA. Available free upon request from PIA is PrintCatalog, a comprehensive listing of all the publications and programs offered by all components of PIA. For further information about how to order or about the contents of publications, contact:

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62nd annual ratio study compiled from the operating statements and balance sheets submitted by representative members of the printing industry and computed by RGS Enterprises, Inc., 1 Carlisle Drive, Arnold, Maryland 21012.

1985

MANAGEMENT GUIDE TO THE PIA RATIO STUDIES

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PRINTING INDUSTRIES OF AMERICA, INC.

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1985 is the 62nd year in which Printing Industries of America, Inc. has collected and published detailed financial ratio information for members of the graphic arts community. The data presented each year provide a detailed and comprehensive picture of the financial status of the major segments of the graphic arts industries in the U.S., Canada, and throughout the world. In addition, it allows individual firms to compare their annual performance with that of many other similar firms, including those which earn well above-average profits. Ratio results are published annually. They are summarized as follows:

- Management Guide to the PIA Ratios
- All Printers by Sales Volume
- All Printers by Product Specialty
- All Printers by Geographic Area
- Sheetfed Printers by Size and Geographic Area
- Web Offset Printers — Heatset
- Web Offset Printers — Non-Heatset
- Combination Offset — Sheetfed/Web
- Book Manufacturers' Ratios
- Large Printers' Ratios
- Typographers' Ratios
- Preparatory Specialists' Ratios
- Binders' Ratios
- Quick Printers

For a more complete composite picture of your company's performance relative to the industry as a whole, several books could be used in your analysis, such as one of the overview volumes, e.g., *All Printers by Sales Volume*, and one that addresses your particular business segment or production process, e.g., *Book Manufacturers or Web Offset — Heatset*, respectively. Alternatively, such analysis is facilitated by participating in the Ratio Study each year and ordering an individual company computer printout which compares a participant's ratios to those of companies which are similar in size and sales volume, produce the same products, and use the same manufacturing process.

Please refer your questions on the PIA Ratio Study to your nearest local PIA affiliated association or to the address above.

Dear Member of the Graphic Arts Community:

The annual PIA Financial Ratio Study is the most comprehensive survey available on the financial health of the graphic arts industry. To help you use the study effectively, it is our pleasure to present to you this management guide.

The guide is divided into three sections. General information about the ratios is included in the first section. The second section includes step-by-step procedures to analyze the financial statements and important relationships inherent to the study and to prepare an analysis of your own financial statements. Meaningful financial topics relative to the graphic arts field supplement the guide and comprise the third section.

We believe strongly in the importance of sharing this type of information among members of the graphic arts community and are proud to have played a role in compiling the 1985 PIA Financial Ratio Study.

H. R. Margolis Company
Certified Public Accountants
Bala Cynwyd, Pennsylvania

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Writer acknowledgements are in order to the following members of H. R. Margolis Company:

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SECTION 1 - BACKGROUND ON THE RATIO STUDIES

THE PIA RATIO STUDIES - STANDARDS OF COMPARATIVE ANALYSIS FOR THE PRINTING INDUSTRY

These PIA Ratio Studies give printing managers standards of comparative financial analysis by which to determine their company's position in the printing industry. Using the information from the ratios, printing managers can decide which of their company's policies to maintain, which to eliminate and which to improve in order to increase profits.

The Ratio Studies are organized into 13 individual studies, each in the form of its own booklet. Each booklet allows printing managers to compare their company's financial operations with the financial operations of other companies, including the industry's Profit Leaders. The 13 booklets are:

- All Printers by Sales Volume
- All Printers by Product Specialty
- All Printers by Geographic Area
- Sheetfed Printers by Size and Geographic Area
- Web Offset Printers - Heatset
- Web Offset Printers - Non-Heatset
- Combination Offset - Sheetfed/Web
- Book Manufacturers' Ratios
- Large Printers' Ratios
- Typographers' Ratios
- Preparatory Specialists' Ratios
- Binders' Ratios
- Quick Printers

The kind of quantitative information that can be drawn from these studies provides valuable insight in identifying a company's strengths and weaknesses and in trying to answer questions such as:

Are my expenses too high in relation to sales?
Is there too little or too much inventory in stock?
Am I producing enough value added sales?
Can we meet our debts as they mature?
Are our customers' receivables being collected promptly?
Should we increase our selling prices?
How can we increase our profits?

The value of the Ratio Studies to printing companies depends largely on how effectively they are used. The purpose of this management guide is to help printing managers make the fullest use of the Ratio Studies in analyzing and interpreting relevant financial information.

This guide is made up of three sections. Section 1 introduces the ratios and discusses the three basic steps in using them -- set-up, comparison, and analysis. Section 2 expands upon the analysis and explains the relationship of the ratios to critical concepts in the financial management of printing companies. Section 3 addresses several topics of current, but more general, concern to the printing industry.

HOW THE NUMBERS ARE COMPUTED

The PIA Ratios are computed according to a method of relative or common size. With this method each company's dollars are converted into a percentage for each category of cost and expense using sales as 100%. These percentages are then totaled and divided by the number of firms in the same category. This method avoids what is known as self-weighting, a common pitfall when dealing with information from companies of various size thus giving each company equal weight regardless of its size.

The following example illustrates how this method of calculation eliminates the problem of the ratios giving inordinate weight to very large firms.

			% of Sales	
Firm	Sales	Factory Payroll	Firm's Ratio Factory Payroll	PIA Ratio Factory Payroll
A	$ 200,000	$ 60,000	30.0%	
B	500,000	100,000	20.0	
C	8,000,000	975,000	12.2	
			62.2% divided by 3 = 20.7%	

ALL FIRMS DEFINED

The term "All Firms" is used in two different ways in the PIA Ratio Studies. Sometimes it refers to all 879 printing firms participating in the studies, including the industry's Profit Leaders, during the past year. At other times it applies to "All Firms" in a given category -- for example, the firms in the sales class from $500,000 to $1,500,000.

PROFIT LEADERS DEFINED

In the printing industry, firms that earn 8% or more income before taxes as a percentage of sales are known as "Profit Leaders". In recent years, about 20% of the firms participating in the Ratio Studies achieve this distinction.

Historically, Profit Leaders have averaged a pretax profit of approximately 12%. This is 4% above the minimum criterion. One assumes, then, that the relevant range of profitability of Profit Leaders is from 8% to 16% of sales.

	1981	1982	1983	1984	1985
Percentage of All Firms that are Profit Leaders	27.10%	25.20%	18.20%	20.40%	20.10%
Profit Leaders' Income before Taxes	11.88%	12.15%	12.08%	11.90%	11.79%

Over the years, 8% or more pretax profit on sales has become an accepted and valid criterion for identifying Profit Leaders in the printing industry. The reason is, in part, due to the strong correlation of sales to assets employed throughout the industry, and that a profit of 8% on sales produces a respectable Return on Investment (ROI). (For a more detailed study, see Section 2.)

PIA Ratio Studies show that the average ROI of Profit Leaders in this past year was 15.65%. Since ROI is one of the most comprehensive measures of profitability, it is a good criterion for determining Profit Leaders. Most printers, however, still relate profit to sales rather than to investment, and so, the pretax profits criterion as a percentage of sales is, at least for the present, the standard used for these studies.

The ultimate objective of the printing manager in using financial comparative analysis, such as is presented in the PIA Ratio Studies, is to obtain qualitative information about the printing industry. He can then make good economic decisions for his business, and increase his printing company's profits. Generally, a printing manager wants to know.....

Are my expenses too high in relation to my sales?
Do I have too little or too much inventory in stock?
Am I producing enough Value-Added Sales?
Can we meet our debts as they mature?
Are our customers receivables being collected rapidly?
Should we increase our selling prices?
How Can We Increase Our Profits??

The PIA Ratio Studies have historically provided insights for answering these and other questions, but only when used effectively. The effective use of the Ratio Studies is the subject of this management guide.

PURPOSE

Year after year, the PIA Ratio Studies have proven that companies with vastly different sales volumes and that fall into many different categories can attain profits. Guiding you to higher profits is the primary purpose of the annual PIA Ratio Studies. Throughout the Studies, there is relevant financial information designed specifically for your graphic arts firm. The key is knowing how to use these studies effectively. There are three basic steps in using the Ratios: set-up, comparison and analysis. Each of these is discussed below.

I. SETTING UP A CHART OF ACCOUNTS

A chart of accounts is your framework for collecting and recording financial data. With a well-designed chart of accounts, you can easily extract all the information you need to compare your firm's financial performance with those of the industry's Profit Leaders.

A chart of accounts has other purposes as well. For example, a detailed chart of accounts can help you make more accurate hourly cost rate computations. It also puts at your fingertips valuable information for managing your budgeting and forecasting.

But one of the most important things to remember about a chart of accounts is that if it isn't designed for a printing firm, it probably isn't very useful. What's more, a chart of accounts designed for any printing firm won't do. You need one designed just for you.

To provide for the collection of as much information as possible, a chart of accounts should segregate factory, selling and administrative expenses. It also should break down each of its major classifications into component parts. Thus, for example, your Material Costs would be divided into paper, ink, film, plates

and other chargeable materials and outside services. Outside services would be further broken down into art, composition, offset preparation, printing, bindery and other. However, this does not mean that these are the only classifications, or that all the classifications are appropriate for all printing firms. If one printer has an in-house bindery and another sends its bindery work outside, their chart of accounts would reflect this difference. For the most part, however, you will find that the general format presented here for organizing a chart of accounts applies to your company as well.

IDENTIFY FUNCTIONS, DEPARTMENTS AND COST CENTERS

A useful chart of accounts is patterned after your company's organizational structure. First of all, identify your company's major functions, departments and cost centers. It may also be helpful to make a flowchart of how items are processed through your present system. This kind of preliminary planning avoids the problems inherent in the chart of accounts in Example 1. Because this company's accounts are not based on its organizational structure, the only relevant information management has to work with is the profit figure. There is no other data with which to identify problem areas or evaluate the company's operations.

EXAMPLE 1 - HOW NOT TO CHART ACCOUNTS

SALES		$5,420,000
EXPENSES		
Wages	$1,788,600	
Materials	1,242,800	
Other Materials	732,200	
Factory Expense and Maintenance	277,900	
Utilities, Electric	21,300	
Delivery	59,000	
Travel	48,200	
Advertising	26,100	
Telephone	26,600	
Insurance	30,900	
Office Expense	139,800	
Bad Debts	21,700	
Heat	38,300	
Employee Benefits	142,500	
Miscellaneous Expense	72,600	
Commissions	149,000	
Sales Discounts	39,400	
Depreciation	166,400	
Rent	124,200	
Taxes	153,900	5,301,400
		118,600
OTHER INCOME		
Discounts Taken	92,300	
Other Income	45,500	137,800
PROFIT BEFORE INCOME TAXES		$ 256,400

IDENTIFY INCOME AND EXPENSES

Next, it is necessary to detail each type of income and each type of expense incurred. Let us assume that you are a medium size printer. According to the organizational structure illustrated in Example 2, the medium printer has administrative, selling and factory departments. The factory department is segregated into cost centers for pre-press, press, bindery and shipping. The pre-press cost center would then be further broken down into art, composition and camera cost centers.

LIST ACCOUNT CLASSIFICATIONS

The next step in developing your chart of accounts is listing your account classifications. These classifications should conform to those in the PIA Ratio Studies and be arranged in a similar format. Remember, detail is essential here.

SAMPLE CLASSIFICATIONS IN A PRINTING COMPANY'S CHART OF ACCOUNTS

Current Assets

Cash in bank
Cash on hand
Accounts receivable
Allowance for doubtful accounts
Other receivables
Inventory
- Work in progress
- Paper
- Other chargeable materials and departmental supplies

Prepaid expenses
- Insurance
- Interest
- Officers' life insurance
- Taxes and other

Loans and exchanges

Current Liabilities

Notes payable
Accounts payable
Employees' federal withholding tax
Employees' and accrued FICA
Employees' local tax withheld
Employees' state tax withheld
Accrued state unemployement tax
Sales tax collected
Estimated state and federal income taxes payable
Accrued
- Business taxes
- Interest
- Payroll
- Vacation payroll
- Other

Shareholders' Equity

Common stock
Preferred stock
Paid-in surplus
Retained earnings
Dividends paid
Treasury stock

Income

Sales
Sales returns and allowances
Sales discounts

Cost of Printing Produced

Materials
- Purchases
  - Paper
  - Ink
  - Film
  - Plates
  - Other materials
- Outside services
  - Art
  - Composition
  - Offset preparation
  - Printing services
  - Bindery
  - Other
- Purchase discount

Factory labor
- Direct labor
- Indirect labor
- Supervision
- Employees' benefits - factory
- Payroll taxes - factory

SAMPLE CLASSIFICATIONS IN A PRINTING COMPANY'S CHART OF ACCOUNTS
(Continued)

Cost of Printing Produced
(Continued)

Factory expenses
- Factory depreciation
- Factory supplies and expenses
- Heat, light and power
- Postage and freight
- Real estate taxes
- Rent
- Repairs and Maintenance
  - Buildings
  - Equipment
- Vehicle expense

Administrative Expenses

Accounting and legal
Bad debts
Collection expenses
Computer services
Contributions
Depreciation - administrative
Dues and subscriptions
Employees' benefits - administrative
Office salaries
Office supplies and expenses
Officers' life insurance
Officers' salaries
Payroll taxes - administrative
Postage
Taxes - business
Telephone

Selling Expenses

Advertising
Auto expenses - selling
Depreciation - selling
Employees' benefits - selling
Gifts and flowers
Payroll taxes - selling
Sales office expenses
Sales salaries and commissions
Sales and travel expenses

Interest Expense

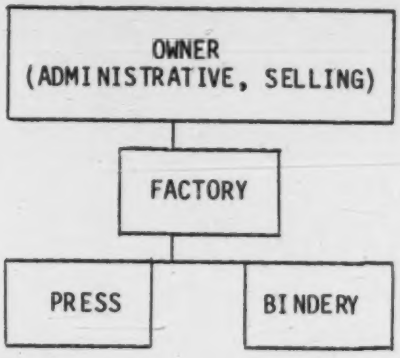
(Interest expense is the only account in this category, but it is, nonetheless, an essential account.)

Other Income - Expense

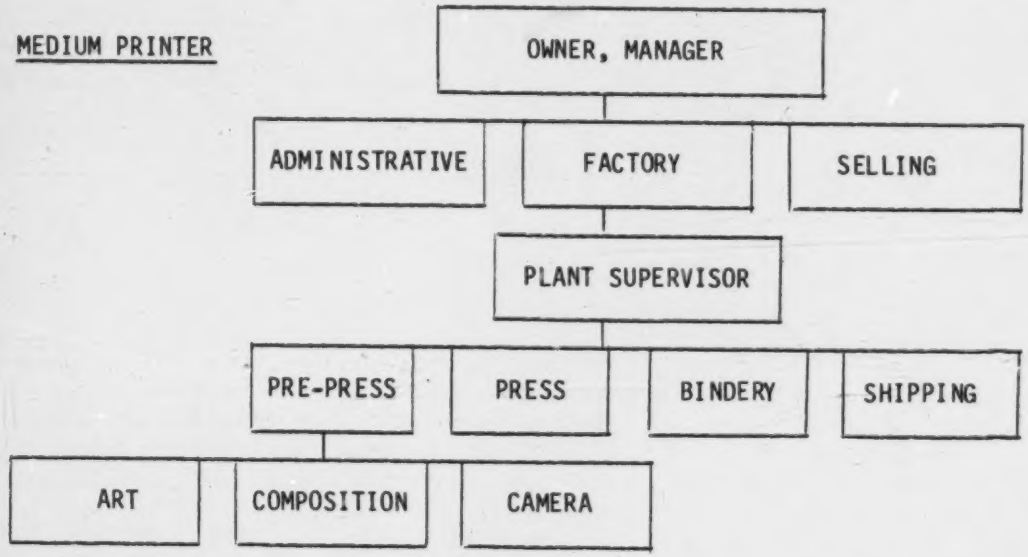
Interest income
Gain or loss on sale of fixed assets
Other income
Other expense
Provision for state and federal income taxes

EXAMPLE 2 - ORGANIZATIONAL CHARTS

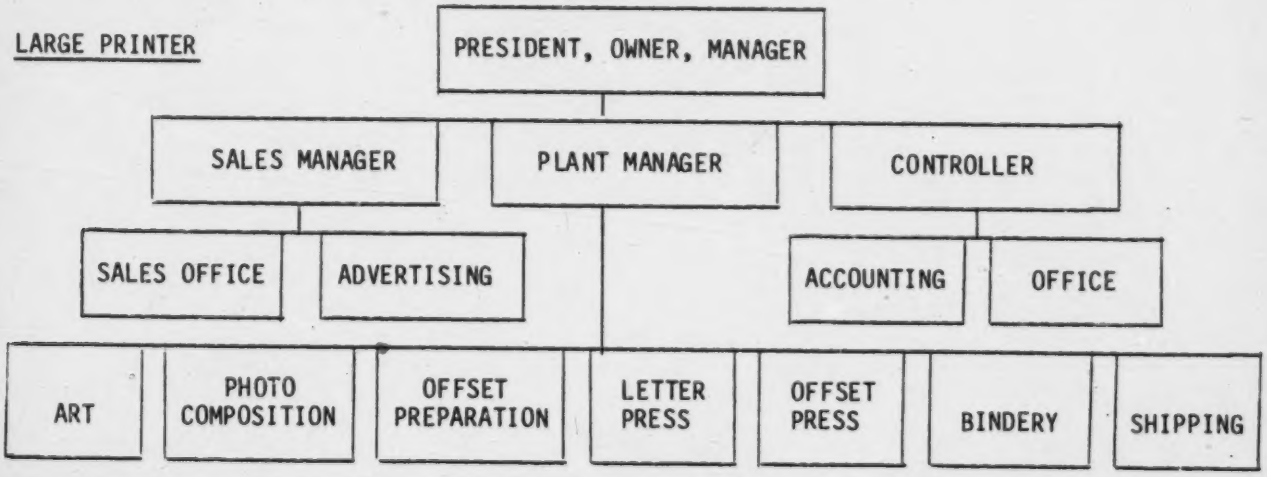
SMALL PRINTER



MEDIUM PRINTER



LARGE PRINTER



SEGREGATE DUTIES

To illustrate the process we will concentrate on one expense -- PAYROLL. Use your payroll records to identify each employee's job function. Then organize the functions appropriately (based on the organizational chart) into factory employees, administrative employees and selling employees. Also, organize payroll related expenses (payroll taxes and employee benefits) in the same way.

Identifying job functions of factory employees is not very difficult, but it does take more planning because this is where the bulk of your employees work. Furthermore, this is where your company's work is accomplished. As an example, we will assume that your payroll records have identified 15 factory employees. Their job functions are as follows:

JOB POSITION OF FACTORY WAGE EARNERS

1. Plant Supervisor
2. Shipping Clerk
3. Truck Driver
4. Artist
5. General Help
6. Pressman
7. Pressman's Apprentice
8. Proofreader
9. Compugraphic Operator
10. Stripper
11. Pressman
12. Cutter
13. Folder
14. Hand Binder
15. Cameraman

Now, match up each job with the corresponding cost center in the organizational chart. You will note that there is a separate job function for general helpers, shipping clerk and the truck driver. General helpers are used in almost every cost center. Cost-benefit analysis comes into play here. Their work cannot be directly chargeable to a certain job; therefore their payroll expenses should not be classified as a direct labor function. The same principle holds true for the shipping clerk and the truck driver. These employees should be classified as indirect labor since they are responsible for general factory duties. (The PIA Standard Classification of Accounts itemizes these wages as: a) General Factory Salaries and Wages and b) Packing, Shipping and Delivery Wages.)

HOW TO CHART THE ACCOUNTS

Referring to the PIA Standard Classification of Accounts, we will now chart your Factory Payroll accounts using the information obtained by identifying functions and segregating duties. This is the result:

EXECUTIVE SALARIES.....	Plant Supervisor
INDIRECT WAGES	
PACKING, SHIPPING AND DELIVERY WAGES.....	Shipping Clerk
.....	Truck Driver
GENERAL FACTORY WAGES.....	General Helper
.....	Maintenance
DIRECT WAGES	
PRE-PRESS	
ART.....	Artist
COMPOSITION.....	Compugraphic Operator
	Proofreader
CAMERA.....	Stripper
	Cameraman
PRESS.....	Pressman
.....	Pressman's Apprentice
BINDERY.....	Cutter
	Folder
	Hand Binder

Combining departmental wages for your Factory Payroll section of the Statement of Income would result in the following:

FACTORY PAYROLL	
Executive salaries	$XXX
Direct wages	XXX
General factory wages	XXX
Packing, shipping and delivery wages	XXX
Payroll taxes	XXX
Employee benefits	XXX
TOTAL FACTORY PAYROLL	$XXX

This illustration has concentrated on Factory Payroll only. Other expenses and revenues should be identified, segregated and charted according to relevant cost centers in your organizational chart. The result will be an organized Chart of Accounts from which you can draw information for meaningful financial statements.

II. COMPARE

In order to compare the financial information in your chart of accounts with the PIA Ratio Standards, there must be some kind of a common denominator. If you convert dollars into percentages, you will have that common denominator. The results will be percentile statements called "common size" statements. Dollar amounts are different for each firm; "common size" statements are comparable because every company's base is the same - 100% of sales, value added, or total assets.

Now, you are ready to compare the percentage derived from your company's chart of accounts with those of PIA. Your Company's outside services costs of $331,600 may be good, bad or indifferent, but outside services costing 8% of sales suddenly becomes meaningful when compared to a target range established by Profit Leaders (see Example 3).

EXAMPLE 3 - REPORT ON OPERATIONS

	YOUR COMPANY		PIA PROFIT LEADERS	DIFFERENCE
	DOLLARS	"COMMON SIZE" OR % OF SALES	"COMMON SIZE" OR % OF SALES	MORE (LESS)
SALES OR VALUE OF PRODUCT PRODUCED	$4,000,000	100.00%	100.00%	-
FACTORY COST OF PRODUCT				
MATERIAL				
Paper	926,800	23.17	23.26	(0.09)%
Other chargeable materials	218,400	5.46	5.54	(0.08)
Outside services	331,600	8.29	6.79	1.50
TOTAL MATERIAL	1,476,800	36.92	35.59	1.33
FACTORY PAYROLL	1,075,200	26.88	24.81	2.07
FACTORY EXPENSE	511,200	12.78	11.81	0.97
TOTAL FACTORY COST OF PRODUCT	3,063,200	76.58	72.21	4.37
GROSS PROFIT	936,800	23.42	27.79	(4.37)
ADMINISTRATIVE AND SELLING EXPENSES				
Administrative expenses	404,400	10.11	8.92	1.19
Selling expenses	328,000	8.20	6.92	1.28
TOTAL ADMINISTRATIVE AND SELLING EXPENSES	732,400	18.31	15.84	2.47
INCOME BEFORE INTEREST EXPENSE	204,400	5.11	11.95	(6.84)
Interest expense	79,600	1.99	1.35	0.64
OPERATING INCOME	124,800	3.12	10.60	(7.48)
Other income	28,000	0.70	1.30	(0.60)
INCOME BEFORE INCOME TAXES	$ 152,800	3.82%	11.90%	(8.08)%

PICK YOUR CATEGORIES FOR COMPARISON

The PIA Ratio Studies allow you to compare your "common size" statements or percentages with those of other firms in several different ways. You may, for example, compare your percentages with those of all firms in a particular category -- sales volume, product specialty, etc. -- or with Profit Leaders only. The illustration below lists the categories of possible comparisons. Whichever comparison you choose, keep in mind that there may be other outside factors influencing your firm's position in the industry. The Ratio Books suggest what these other relevant factors may be so you can refine your analysis.

CATEGORIES FOR COMPARISON

SALES VOLUME - Ratios and statistics are presented in six categories:

Sales to $250,000	$1,500,000 - $5,000,000
$250,000 - $500,000	$5,000,000 - $10,000,000
$500,000 - $1,500,000	Sales over $10,000,000*

* A separate PIA Ratio Book LARGE PRINTING FIRMS' RATIOS breaks down this sales category as follows:

$10-20 million	$40-80 million
$20-40 million	Sales over $80 million (if applicable)

PRODUCT SPECIALTY - Companies producing similar products usually confront similar problems. Percentages from companies with over 50% of their sales volume in key market areas are presented in the following categories:

Commercial and Advertising	Label
Magazine and Periodical	Book
Newspaper	Typographers
Packaging	Binders
Financial	Preparatory Specialists
Direct Mail - Catalog	Quick Printers
Directory	

PROCESS - Comparisons of firms using the following predominant process provide significant information:

Sheetfed Offset
Web-Fed Offset - Heatset
Web-Fed Offset - Non Heatset
Combination Sheetfed and Web-Fed Offset

GEOGRAPHIC AREA - Significant financial information for comparison can be drawn from companies working in the same economic environment. The Ratio Studies break down geographic regions as follows:

New England and Upstate New York	Chicago Area
Metropolitan New York and New Jersey	West North Central
Eastern Pennsylvania, Maryland and D.C.	Plains and Mountain States
Southeast Atlantic	Pacific Southwest
East North Central	Pacific Northwest
South Central	Canada

Identify which of the aforementioned categories reflect your company's operations and compare your results with theirs. You will then be ready for the next and most important step in the meaningful use of the ratios: ANALYSIS. Analysis will help you identify any problem areas in your company as well as point out profitable areas that you will probably want to maintain.

III. ANALYSIS

One reason for analyzing the financial picture of your printing business is to determine its overall position in the printing industry. However, that is not the only reason. Comparing your company with others in the industry enables you to determine which financial operations should be maintained at their current level and which should be improved in order to achieve your profit objective. Comparative financial analysis should be broad, so it is important to evaluate all of the ratios together, not individually. Moreover, your financial analysis should incorporate an examination of ratios over a period of time and include a comparison of results with trends in the printing industry.

Evaluate Ratios Collectively, Not Individually

Individual ratio results may be useful indicators of the health of one particular aspect of your printing company but they do not provide you with truly significant financial information. Each ratio should be viewed in light of other ratios and facts concerning your company. For example, increases in depreciation expense and interest expense percentages from the income statement may be alarming, at first glance. An analysis of the balance sheet, however, may show that such alarm is unwarranted. Top management may have long range profit planning goals effected by plant expansion (increase in assets) funded through attractive debt-financing (increase in liabilities). A slow, outdated press may have been replaced by a new, more efficient one. Deeper analysis into the income statement may reveal that the company's income tax rate was lowered by investment tax credits and accelerated depreciation on the new press. Therefore, do not take one ratio out of context. Make your analysis broad enough to encompass all of your financial results.

Observe, Assess, Monitor

Observing your ratios over a period of time will produce a number of meaningful trends upon which a printing manager may wish to act. Monitoring ratios over a period of time also helps see if the action taken was, in fact, appropriate.

Trend Analysis

Although the primary purpose of examining printing industry ratios over a period of time is to analyze your firm's strengths and weaknesses, it may be possible that if one of your company's ratios is way "out of line", there is nothing you can do to improve it. This is especially true if the whole printing industry is experiencing a slump in a particular area. Furthermore, if industry trends should be showing improvement, any action on your part may be countereffective. For example, when paper costs soared nationwide, a printing manager's hasty decision to lower inventories may have proven disastrous when shortly after the price increase, the supply of paper became scarce. In this case, the inadequate inventory would have disrupted production and resulted in lost accounts, soaring operating expenses, and even more reduced profits.

Remember, trends are only clues and should be observed in concert with other concrete facts. Also, remember that other factors out of the industry's direct control may cause trends in one direction to reverse at anytime.

Assess The Printing Industry

Comparing financial relationships between your printing firm and the PIA Standards provide crucial facts for sizing up your company's performance in relation to the industry as a whole. The next section of this booklet provides detailed information on effectively using the PIA Ratio Studies' results. This information is designed to enable printing management to begin their consideration of how to improve those areas that need attention most.

SECTION 2 - ANALYSIS OF THE RATIOS

VALUE ADDED - WHY IT'S IMPORTANT

If your company's sales are the same or even higher than they were last period but profit is down, clearly, something is wrong. In all probability it is your Value Added, or inside sales. Too often, however, management is not familiar with the concept of Value Added and fails to recognize it as the root of the problem.

VALUE ADDED DEFINED

Value Added is a technical term for sales of a company's own manufacture. It is calculated as sales less cost of materials and outside purchases.

SALES		$100
LESS: MATERIALS		
Paper	$22	
Other chargeable materials	6	
Outside services	7	35
VALUE ADDED		$ 65

VALUE ADDED MAXIMIZES PROFIT

By neglecting Value Added, printing firms pass over a valuable accounting procedure for maximizing profits. Of course, there can be reasons other than inattention to Value Added for a company's poor operating performance. However, time and time again, poor operating performance stems from failure to heed this one basic principle of accounting: Profit is achieved from sales of a company's own manufacture.

UNDERSTANDING VALUE ADDED

Since Value Added is the residual of sales less cost of materials, this value, provided by your own manufacture, is all you have available to pay your other expenses, including factory labor, factory expenses, administrative expenses, selling expenses and interest. Generally, within a relevant range of operations, these expenses behave as fixed costs and so, their "overhead" remains practically constant. Therefore, you want to maximize your Value Added. This is different from the basic "cost sheet concept" usually applied in the printing industry.

The following example illustrates the effect on operating income when we increase the Value Added derived from $1,000,000 of sales from $635,600 to $675,000. To simplify our example we will assume that "overhead" (factory labor, other factory, administrative, selling and interest expenses) will remain the same. Actually, though, they would increase, but very little. We are taking this liberty to prove the point that, within this relevant range, these expenses behave in a fixed manner. Furthermore, since full-service printing is a highly fixed cost operation, this helps to understand the effect of Value Added on printing profits.

	Original	After Increase in Value Added
SALES	$1,000,000	$1,000,000
Cost of Materials	364,400	325,000
VALUE ADDED	635,600	675,000
"Overhead"	591,000	591,000
Operating Income	$ 44,600	$ 84,000

THE BETTER STATEMENT

Statements of Operations are more meaningful when prepared on the basis of Value Added. In this type of presentation, management starts its financial analysis with Value Added instead of with sales volume. Too often, printers tend to look to sales as the sole criterion of profit when, in fact, Value Added is always the better indicator. For example, both of these results are possible for a printing operation in a given month:

	Result A	Result B
SALES	$125,000	$ 90,000
MATERIALS	60,000	15,000
VALUE ADDED	$ 65,000	$ 75,000

This example shows that sales of $125,000 per month that produce $65,000 of Value Added are not as good as sales of $90,000 that provide $75,000 of Value Added. The latter yields $10,000 more with which to cover overhead. Clearly, the sales figures in the statement are misleading. Value Added gives you a truer picture of your operations by eliminating the distortion that material costs introduce into the conventional operating statement.

If we were comparing the statement of operations of a short-run sheetfed company with that of a web-offset firm, and our comparison was related to percentages based on sales, we could have significant differences in ratios. The reason is significant differences in material costs. It would appear that the web-offset operation had a lower factory labor cost because a substantial amount of their sales was materials. But, in truth, the factory labor cost could be more or less than in its counterpart sheetfed operation as it relates to the Value Added produced by this labor.

Almost every company's product mix is different and, by using Statements of Operations based on Value Added, this product mix difference is eliminated. This is why Value Added is always a better statement with which to evaluate your operations.

MEANINGFUL MARK-UPS FOR COST

Understanding the Value Added concept permits focusing on materials mark-up to recover overhead. It is essential that materials be priced at their cost plus their proper share of the allocated overhead. Because Value Added is so important, it is imperative that the overhead recovered by materials be correct. The trite 5, 10 or 15% mark-up of materials (so-called handling charges) may or may not be correct. You should determine as a cost center cost the correct overhead rate to be charged to materials. This is just as important as the correct press hourly rate.

Once this is done, you are looking at a cost sheet that contains materials with their share of overhead and cost center costs. You must apply the concept to profit mark-up. This will differ as the relationship of materials and manufacturing changes.

PROFIT MARK-UPS -- VALUE ADDED CONCEPT

Profit mark-ups should take into account the Value Added concept; the higher the proportion of materials in a job, the higher should be the profit mark-up.

A sound profit mark-up policy is one which achieves and complements the business objectives of your firm. Printing firms should always seek to maximize their Value Added by attracting jobs with a high Value Added and by converting low Value Added jobs to higher ones. A general rule here is that the higher the Value Added, the more desirable the job and the lower the profit mark-up. Conversely, jobs with a small Value Added are less desirable and should receive a higher profit mark-up.

There is no neat mathematical formula to distinguish desirable jobs from less desirable ones. What is presented here is an overall philosophy which you can, with minimum effort, integrate into your own pricing procedures. For example, let's look at two jobs: one is a "good" job; the other is a "better" job.

GOOD JOB

Materials	$ 8,000
Cost center costs	2,000
TOTAL	$10,000

Before profit mark-up, the Value Added of this job is only $2,000. Now, price this job and include a profit.

Similarly, let's consider a better job:

BETTER JOB

Materials	$ 2,000
Cost center costs	8,000
TOTAL	$10,000

This second job has a Value Added of $8,000 before profit mark-up. Now, price this job with a profit mark-up.

If you followed the philosophy presented earlier, your prices should have included a higher profit mark-up for materials and cost centers in the good job and a lower profit mark-up in the better job. Why? Because the better job contributes more to overhead.

VALUE ADDED AND SALES COMPENSATION

A good printing manager knows how to motivate the salesforce. However, while it is generally acknowledged that salespeople compensated on a commission basis are more effective than salaried salespeople, little attention is paid to the kinds of jobs that they bring in. Commissions are usually based on total sales dollars regardless of the Value Added component of the sale.

The inequities of this system quickly become apparent when sales compensation is examined in light of the Value Added concept. For example, what is there in such a system to motivate the salesforce to bring in "better", high Value Added jobs? Nothing. Where is the reward for the salesperson who does bring in the "better" sales? There is none.

Sales commissions should be a percentage of Value Added. Basing sales compensation on Value Added is becoming an increasingly popular policy among printing firms and has already been adopted by some of the most successful firms in the industry. In this system, the commission on Value Added in a job is equivalent to the commission a salesperson would receive on an average sale that involves an average amount of materials. Although at first glance it would appear that your salespeople's earnings would be reduced if their commissions were based on fewer Value Added dollars, this is not the case. In fact, compensation for those salespeople who previously were selling high Value Added jobs -- those with a significant amount of inside manufacture -- would increase. Commissions would only be reduced for those individuals selling large amounts of paper and other outside services.

The motivational factor that is built into this system is, of course, higher commissions for salespeople who bring in higher Value Added jobs. The justification is that it is these jobs that pay overhead and produce a profit, and therefore, contribute most to management's objectives.

WHAT THE REPORT ON OPERATIONS OFFERS MANAGEMENT

Every manager has to pause occasionally, step back, and ask, "How well am I doing?" The operating statement is an excellent source of information with which to answer this question. Financial statements, in general, are historical documents. They tell what has happened in a particular year or series of years. But, the most valuable information to most managers concerns what probably will happen in the future. By comparing, evaluating and analyzing the historical operating statement, the manager has more than just a crystal ball with which to forecast the coming year.

The effective manager uses the operating statement as an important tool in the decision-making process. Once historical data is accumulated and analyzed, the manager can formulate and plan for the future, set objectives and attempt to control the outcome of those plans.

PIA Ratios are especially helpful in deciphering operating results. By comparing one's own company with other companies in the industry, the printer can more easily pinpoint problem areas. Since the Ratios are percentages, a more precise comparison can be made with other plants regardless of variations in dollar amounts. A printer can make even closer evaluations using PIA's specialized Ratio Study volumes. The discussion in this Guide, however, will deal with the book, All Printers by Sales Volume.

A WORD ABOUT RATIOS IN GENERAL

Ratios should be viewed as a starting point. By comparing a printing company with the PIA Ratio results, a printing manager can gain insight into trends and make intelligent judgments as to their significance. Variances in PIA Ratios and one's company indicate what costs and expenses should be examined in greater depth.

At the same time, one should keep in mind the peculiarities of business, technological changes and economic factors which affect the results shown on the operating statements.

Perhaps, the best way to approach the analysis of the operating statement ratios is to make the comparison between the PIA Ratios and your company. Then when variances occur between the objective and the achieved, ask the following questions:

- Why did the costs differ?
- Was the difference adverse or favorable?
- Who was responsible for the difference?
- What can be done about it?

SAMPLE ANALYSIS OF THE OPERATING STATEMENT

The report on operations in All Printers By Sales Volume is set up by sales range as follows:

All Firms Reporting
Sales to $250,000
Sales from $250,000 to $500,000
Sales from $500,000 to $1,500,000
Sales from $1,500,000 to $5,000,000
Sales from $5,000,000 to $10,000,000
Sales Over $10,000,000.

For each sales range, ratios are provided for All Firms as well as Profit Leaders in that range. "Profit Leaders" are those firms achieving 8% or more profit on sales. Achieving ratios similar to those of the Profit Leaders should be a printing company's objective. It is there that our comparison will be directed.

The separate line items on the Report on Operations will be defined as they come up in discussion.

Pages 32 through 34 show a sample PIA Ratio - Report on Operations and Supporting Schedules and a fictional company "Printemps". The PIA Ratios used here for discussion purposes reflect this year's results. In doing your comparison, please refer to this year's PIA Ratio Study, All Printers by Sales Volume.

Printemps, our sample company, is a sheetfed offset printer. Its sales are $7,000,000 for the current year. From the 1985 Ratio Study, we have abstracted the columns for the sales range $5,000,000 to $10,000,000 for our comparison. Our next step was to list the dollar amounts from Printemps' operating statement to coincide with the PIA chart of accounts. We were then ready to convert the Printemps' dollar figures to percentages of sales so that we could compare, side by side, Printemps' operating results with the Ratio Study results.

All companies should compare their percentages item-by-item with the Ratio Study results in a similar fashion.

In our analysis, we will begin by defining what costs should be included in various line items on the operating statement. We will then compare our sample, Printemps, with the results in the PIA Ratio Studies and discuss the major significant differences. Finally, we will attempt to pinpoint what could have caused the variances and suggest how the situation could be improved in the future.

SAMPLE COMPARISON

Sales Or Value Of Product Produced

The starting point on a Report on Operations is sales. Sales are, of course, the amount you charge for your product. All the thrift-saving ideas about costs are insignificant if a printer does not price the company's products intelligently. Printing is a made-to-order product. Every job is different and uses different facilities in your plant for various periods of time. You should know your cost. In order to price your finished job, you must have a good system for gathering these costs and formulating a sales price that is competitive and profitable. Printemps' sales are $7,000,000. Further analysis will help evaluate how well the firm is pricing its product.

Cost Of Product Produced
Materials

Paper

Paper usually represents a printer's largest single cost on a job. Printemps ratios for paper costs compare as follows:

PIA Profit Leaders	Printemps	Variance
24.87%	28.62%	(3.75%)

The variance is unfavorable. Printemps is spending much more on paper than PIA Profit Leaders. Some of the reasons for this might be:

1. Purchasing policies at Printemps need improvement.
2. Waste and spoilage is not controlled properly. It is extremely important that paper be handled properly in all phases -- shipment, storage, pressroom, bindery, etc.
3. The type of paper used could have an effect on paper costs, as could product mix.

The effective manager will investigate these areas to find out where the problem or problems are occuring. Once this is done, corrective action can be taker to decrease the amount of money being spent on paper, if that is possible or understanding the reasons if it is not possible.

Other Chargeable Materials

This line item on the operating statement has a supporting schedule (page 33) and includes the following:

	PIA Profit Leaders	Printemps	Variance
Ink	1.70%	1.85%	(0.15)%
Film	0.71	3.29	(2.58)
Plates	1.18	1.88	(0.70)
Other Chargeable Materials	0.83	0.23	0.60
	4.42%	7.25%	(2.83)%

Once again, Printemps has an unfavorable variance. They may have a general problem with inventory control which could also be affecting the paper variance. If Printemps has a perpetual system of inventory control, its managers should ask if it's working. Is there enough inventory on hand to prevent costs associated with rush orders? Is the purchasing department operating efficiently? Are prices compared periodically? Still another area for inspection might be efficiency or inefficiency in handling materials. Are materials disappearing?

Printemps' variance of 2.58% for film is especially high. Management explains that Printemps has invested in a new scanner and is doing most of its own color separations, as well as some work for other area printers. This accounts for the Other Income which we will discuss later. Printemps also does predominantly high-quality color work, which also accounts for the variance in film usage.

This example shows why management should not interpret the variances on an on an isolated basis. You must keep in mind your business and how it operates as you go through your evaluation.

Outside Services

Outside Services are costs associated with work done for a printing firm by another company. The previous chapter in this guide, "Value Added -- Why It's Important" explains why it is beneficial for a printer to keep as much manufacturing in-house as possible. Printemps obviously sends a lot of its work out. It could probably benefit from investigating the possibility of obtaining the necessary additional means to perform some of these manufacturing steps itself. Its ratios for Outside Services compare with PIA Profit Leaders as follows:

	PIA Profit Leaders	Printemps	Variance
Composition	0.30%	0.35%	(0.05)%
Offset Preparation	2.51	0.50	2.01
Printing	1.35	1.10	0.25
Binding	1.98	4.33	(2.35)
Other Outside Services	2.53	2.25	0.28
	8.67%	8.53%	0.14%

Printemps fares especially well in Offset Preparation, since it does practically all of its own color separations. However, a weakness is apparent in the area of binding. In order to improve this situation, Printemps has ordered some new binding equipment which will enable them to do more of their binding in house. Such a move will certainly improve its Value Added position and should increase profits.

Factory Payroll

Labor costs in graphic arts are always a large percentage of sales. This is one area that can have drastic bottom line results on your operating statement. Even though you may feel trapped into accepting high labor costs, there are ways to make sure that you are getting as much benefit from the costs as possible. Let's take a look at payroll:

	PIA Profit Leaders	Printemps	Variance
Salaries-Executive	1.37%	1.87%	(0.50)%
Direct Wages	16.62	20.26	(3.64)
General Factory Wages and Salaries	1.53	0.89	0.64
Packing, Shipping and Delivery	0.72	-	0.72
Payroll Taxes	1.53	1.85	(0.32)
Employee Benefits	2.34	2.28	0.06
	24.11%	27.15%	(3.04)%

Allocation of Factory Wages between Direct Wages and General Factory Wages is always difficult. When you prepare your numbers just remember that Direct Wages are earned by employees engaged in production and General Factory Wages are for work not directly related to chargeable jobs. It may be more meaningful to analyze all Factory Wages combined to get the overall effect of how your company compares with the industry's Profit Leaders.

Printemps spends 3.04% more for Factory Payroll than the PIA Profit Leaders. Going down the schedule, we see Executive Salaries are high. One reason for this may be that the factory executive is one of the principals in the business.

Printemps major variance from Profit Leaders occurs in Direct Wages. It may be wise for the manager to sit down and review the following checklist to determine possible causes:

1. Is there a problem in the labor contract? Did managers anticipate costs and bargain intelligently?
2. Is there a good system for gathering job costs so that jobs can be priced realistically?
3. Is there an excessive amount of overtime? Does management know at what point overtime is and is not profitable?
4. Are vacations scheduled for slack periods?
5. Does management try to avoid idle time? Do employees wait around because of:
   - poor instruction
   - no material
   - no power
   - no repairman
6. Are production operations delayed while management makes decisions or, even worse, is one job removed from a press to get a "rush" job through thus causing extra make-ready time?
7. Do sales and manufacturing departments work together to determine which jobs have economical priority?

Because labor is so expensive, management has to watch it closely, and control costs tightly. Printemps is trying to do this by putting one of the owners of the business on the production floor. This will help keep the lines of comunication open between management and factory and should promote efficient operation of the plant.

Factory Expenses

Our Chart of Accounts classifies Factory Expenses as Fixed and Other. Fixed Expenses remain relatively constant regardless of the level of productivity. Printemps' total Fixed Expenses compare as follows:

	PIA Profit Leaders	Printemps	Variance
Total Fixed Expenses	6.11%	7.54%	(1.43)%

The largest variances in this classification occur in:

Depreciation - other	1.09% unfavorable
Insurance	0.71% unfavorable
Utilities	0.38% unfavorable

We know that Printemps' depreciation expense increased, when it recently purchased a scanner. There was no obvious explanation for the unfavorable variance in insurance, however, management should review its insurance coverage to see if it is carrying the proper coverage and determine if it is getting the best price available.

Printemps should also be concerned about its utilities cost, and perhaps review its energy-saving plans. Are machines shut down when not in use? Is the plant heating system outdated and inefficient?

Other Factory Expenses vary with the level of production. Control of these expenses is important to overall profit. Our sample company again needs improvement:

	PIA Profit Leaders	Printemps	Variance
Factory Supplies and Expense	2.02%	2.53%	(0.51)%
Packing, Shipping and Delivery	1.10	0.90	0.20
Repairs and Maintenance	1.22	1.96	(0.74)
Other Factory Expenses	0.63	0.21	0.42
	4.97%	5.60%	(0.63)%

The variance of 0.51% in Factory Supplies and Expense may warrant inspection; if so, are supplies controlled and purchased effectively? Repairs and Maintenance also shows up unfavorably when compared to Profit Leaders. Perhaps, Printemps should review its maintenance policies to see whether machines are breaking down due to neglect or age.

Gross Profit

We have now come to the Gross Profit line in Printemps' Report on Operations. This is a good time to stop in our analysis and look back at the company's manufacturing performance and results. Printemps' Gross Profit percentage is 15.31% compared to the PIA Profit Leaders of 26.85%. So far in our analysis we have discussed where significant variances appear and possible improvements. Many times the most controllable costs are above the Gross Profit line. If a firm consistently falls below industry leaders in the Gross Profit percentage, it must examine problem areas closely and be prepared for considerable belt tightening. Gross Profit has to be high enough to cover Administrative and Selling Expenses and pay for Interest Expense.

Administrative Expenses

Printemps has an average administrative staff. The President is the administrative executive and has kept control of administrative costs and favorably exceeded Profit Leaders in this area.

	PIA Profit Leaders	Printemps	Variance
Total Administrative Expenses	7.29%	6.95%	0.44%

General areas for control in the administrative section, among other things, are office supplies and expenses, postage, and telephone. These items should be monitored for effective purchasing and usage.

Bad debts are another area where management can improve results. One way to accomplish this is to formulate good sound credit and collection policies and see to it that those policies are followed.

Most administrative costs are likely to be insensitive to fluctuations in either production or sales and hence uncontrollable in relation to volume. The manager should try to determine if, overall, Administrative Expenses can be justified in terms of efficient operations.

Selling Expenses

Printemps' Selling Expenses are also low compared to the PIA Profit Leaders.

	PIA Profit Leaders	Printemps	Variance
Total Selling Expenses	7.87%	6.89%	0.98%

This variance may not be as favorable as it appears. It may indicate that Printemps is not spending enough time and money to market its products and increase sales. There is one selling executive and three salespeople. Obviously, the president of the company does some marketing, and while travel and entertainment is actually higher than the Profit Leaders by 0.25%, it is doubtful that Printemps is being as aggressive as it should in its selling efforts.

Interest Expense And Other Income

Printemps compares with PIA Profit Leaders in this classification as follows:

	PIA Profit Leaders	Printemps	Variance
Interest Expense	1.13%	2.60%	(1.47)%
Other Income	1.16	1.40	0.24

Interest Expense is high for Printemps. Besides having rather large long-term notes used to finance equipment, the company has been forced to seek short-term working capital financing at high interest rates. It would be wise for it to improve its cash flow so that these short-term notes could be kept to a minimum. Proper planning and more efficient billing and collection procedures will help the flow of cash.

Other Income from outside separation work, discussed earlier, helps Printemps' Income Before Income Taxes look better. For printers who do not have cash flow problems, it is wise to make sure that idle funds are effectively invested so that interest income can be realized.

The Bottom Line

This brief example has barely scratched the surface in using the PIA Ratio Study to analyze a company's operating results. In examining variances it is sometimes helpful to refer to other parts of the study. For example, in an analysis of Direct Wages, reference to the Significant Facts tables will give the average wages in a particular sales range per employee. Examination and analysis of the Balance Sheet and Return on Investment sections should also be integrated with the Operating Statement analysis in order to get the whole picture.

Once you have compared your results with industry standards for the current year and have isolated the differences from the historical data, it is time for you to plan and set objectives for the future. Proper understanding of the Ratio Study and diligent commitment on your part should result in improved operations. You already know how well you have done in the past year. The next question to tackle is, "How can I do better next year?"

REPORT ON OPERATIONS - SALES = 100%

	SALES FROM $5,000,000-$10,000,000			
	ALL FIRMS	PROFIT LEADERS	PRINTEMPS	
	%	%	$	%
SALES OR VALUE OF PRODUCT PRODUCED	100.00%	100.00%	$7,000,000	100.00%
FACTORY COST OF PRODUCT				
MATERIALS				
Paper	26.24	24.87	2,003,400	28.62
Other chargeable materials	5.59	4.42	507,500	7.25
Outside services	7.80	8.67	597,100	8.53
TOTAL MATERIALS	39.63	37.96	3,108,000	44.40
FACTORY PAYROLL	26.01	24.11	1,900,500	27.15
FACTORY EXPENSES	11.67	11.08	919,800	13.14
TOTAL FACTORY COST OF PRODUCT	77.31	73.15	5,928,300	84.69
GROSS PROFIT	22.69	26.85	1,071,700	15.31
ADMINISTRATIVE AND SELLING EXPENSES				
Administrative expenses	8.00	7.29	479,500	6.85
Selling expenses	8.68	7.87	482,300	6.89
TOTAL ADMINISTRATIVE AND SELLING EXPENSES	16.68	15.16	961,800	13.74
INCOME BEFORE INTEREST EXPENSE	6.01	11.69	109,900	1.57
Interest expense	2.09	1.13	182,000	2.60
OPERATING INCOME (LOSS)	3.92	10.56	(72,100)	(1.03)
Other income	0.72	1.16	98,000	1.40
INCOME BEFORE INCOME TAXES	4.64%	11.72%	$ 25,900	0.37%

SUPPORTING SCHEDULES - SALES = 100%

	ALL FIRMS %	PROFIT LEADERS %	PRINTEMPS $	PRINTEMPS %
OTHER CHARGEABLE MATERIALS				
Ink	1.81%	1.70%	$ 129,500	1.85%
Film	1.19	0.71	230,300	3.29
Plates	1.29	1.18	131,600	1.88
Other chargeable materials	1.30	0.83	16,100	0.23
TOTAL OTHER CHARGEABLE MATERIALS	5.59%	4.42%	$ 507,500	7.25%
OUTSIDE SERVICES				
Composition	0.46%	0.30%	$ 24,500	0.35%
Offset preparation	1.32	2.51	35,000	0.50
Printing	1.01	1.35	77,000	1.10
Binding	2.45	1.98	303,100	4.33
Other outside services	2.56	2.53	157,500	2.25
TOTAL OUTSIDE SERVICES	7.80%	8.67%	$ 597,100	8.53%
FACTORY PAYROLL				
Salaries - executive	1.67%	1.37%	$ 130,900	1.87%
Direct wages	17.32	16.62	1,418,200	20.26
General factory salaries and wages	2.03	1.53	62,300	0.89
Packing, shipping and delivery wages	0.85	0.72	-	-
Payroll taxes	1.74	1.53	129,500	1.85
Employee benefits	2.40	2.34	159,600	2.28
TOTAL FACTORY PAYROLL	26.01%	24.11%	$1,900,500	27.15%
FACTORY EXPENSES				
Fixed Expenses				
Depreciation - real estate	0.23%	0.27%	$ 21,000	0.30%
Depreciation - other	2.84	3.01	287,000	4.10
Taxes - real estate	0.19	0.20	14,000	0.20
Taxes - other	0.24	0.25	16,800	0.24
Insurance	0.28	0.29	70,000	1.00
Building rent	0.86	0.71	-	-
Utilities - heat, light, etc.	1.23	1.27	115,500	1.65
Equipment rental	0.55	0.11	3,500	0.05
Total Fixed Expenses	6.42	6.11	527,800	7.54
Other Expenses				
Factory supplies and expense	2.07	2.02	177,100	2.53
Packing, shipping and delivery expense	1.00	1.10	63,000	0.90
Repairs and maintenance	1.36	1.22	137,200	1.96
Other factory expenses	0.82	0.63	14,700	0.21
Total Other Expenses	5.25	4.97	392,000	5.60
TOTAL FACTORY EXPENSES	11.67%	11.08%	$ 919,800	13.14%

SUPPORTING SCHEDULES - SALES = 100%

	ALL FIRMS	PROFIT LEADERS	PRINTEMPS	
	%	%	$	%
ADMINISTRATIVE EXPENSES				
Salaries - executive	2.44%	2.44%	$100,000	2.44%
Salaries - office	1.46	1.46	60,000	1.46
Payroll taxes	0.73	0.73	30,000	0.73
Employee benefits	0.49	0.49	20,000	0.49
Bad debts	0.49	0.49	20,000	0.49
Office supplies and expenses	0.98	0.97	40,000	0.98
Professional fees	0.59	0.59	24,500	0.60
Taxes - business	0.17	0.17	7,000	0.17
Telephone	0.39	0.62	25,200	0.36
Other administrative expenses	1.36	1.36	55,800	1.37
TOTAL ADMINISTRATIVE EXPENSES	8.00%	7.29%	$367,500	9.00%
SELLING EXPENSES				
Salaries - executive	1.34	1.34	$ 55,000	1.34
Salaries and commissions - salesmen	3.91	3.91	160,000	3.91
Salaries - sales office clerical	0.98	0.98	40,000	0.98
Payroll taxes	0.29	0.29	11,700	0.29
Employee benefits	0.35	0.40	14,400	0.35
Advertising	0.37	0.25	10,000	0.24
Travel and entertainment	0.77	0.55	22,000	0.54
Other selling expenses	0.69	0.49	19,700	0.48
TOTAL SELLING EXPENSES	8.60%	7.87%	$332,300	8.13%

THE BALANCE SHEET - HOW WE STAND

A balance sheet is a statement of a company's financial position -- it is composed of the assets, liabilities and owners' equity at a particular point in time. The term "balance sheet" comes from the fact that the two sides must balance. Mathematically, there are two possible balance sheet equations:

$$\text{Assets} = \text{Liabilities} + \text{Owners' Equity}$$

or

$$\text{Assets} - \text{Liabilities} = \text{Owners' Equity}$$

A printing company's assets are everything the company owns. Its liabilities are everything the company owes. Owners' equity is the excess of assets over liabilities. It is the measure of the financial interest of the proprietor, partners or shareholder(s) -- whoever owns the company. Another term for proprietors', partners', or shareholders' equity is "net worth", although that term is not as widely used today as it was in the past.

A good printing manager understands the components of a balance sheet and their relationship to company operations. An intelligent evaluation of the make-up of the balance sheet and its ratios reveals many factors about a company's operational capabilities.

Remember that particular ratios and relationships may differ depending on which processes a printing company uses or what products it produces. For example, it is likely that a web-offset printer would have more investment in plant equipment and, correspondingly, more liabilities or equity to support those assets than a sheetfed printer. By following the general analysis below, all printing managers should be able to customize and compare their own firm's financial position to that of the industry and the Profit Leaders. We will focus on the balance sheet of the imaginary company, Printemps, and compare that to the sample PIA ratio balance sheet on page 46.

ASSETS - THE PRINTER'S INVESTMENT

How many dollars in assets should we invest to produce X dollars in profit? As most people in business know, this is not an easy question to answer. Return on Investment (ROI), our profitability measure, has been defined as income divided by assets.

$$\text{ROI} = \frac{\text{Income}}{\text{Assets}}$$

To increase ROI, two options are available -- either increase income or decrease assets.

To increase ROI: (1) Increase income
(2) Decrease assets

In this analysis of Printemps' balance sheet, we will concentrate on reducing assets or, more importantly, making sure the company's assets are being managed properly and efficiently to produce income.

Because printing is a highly capital-intense industry, there are many types of assets involved. These assets are normally segregated into Current Assets, Fixed Assets, and Other Assets.

Current Assets	$XXX
Fixed Assets	XXX
Other Assets	XXX
Total Assets	$XXX

We will examine each type of asset as it relates to printing.

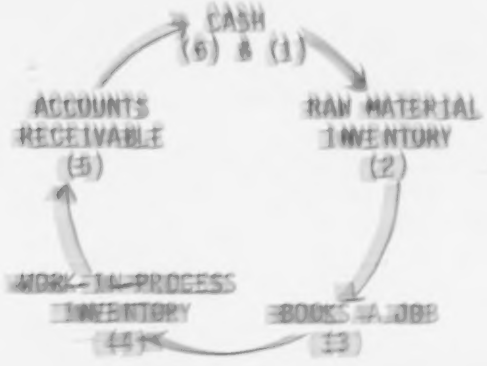
CURRENT ASSETS - THE PRINTER'S LIQUIDITY

Traditionally, Current Assets are listed on the balance sheet in the order of liquidity. They may even be referred to as a company's liquid assets; i.e., assets that can be converted into cash quickly, usually within a period of a year. A printer uses these assets to pay accounts payable or other liabilities as they come due.

Current Assets follow a circular process during the year, continuously being used up and replaced. For the average printer, this process takes place many times a year.

To analyze the printer's trading cycle, consider the following:

(1) A company starts with cash;
(2) next, it purchases raw materials -- paper, ink, film, etc.;
(3) then it books a job and;
(4) puts costs and materials into work-in-process;
(5) When the job is completed and shipped, the work-in-process inventory becomes an account receivable;
(6) finally, the account receivable is converted back into cash and the cycle starts anew.



THE CLUE HERE IS TO ASSESS THE TRADING CYCLE FOR MORE PROFITS.

THE KEY IS TO REDUCE THE TIME INVOLVED IN EACH CYCLE.

THE MORE CYCLES PER YEAR, THE MORE PROFIT GENERATED.

TURNOVER

Turnover is the time it takes to complete one trading cycle. Optimizing turnover is in keeping with sound management principles, but appears to conflict with some printers' practices. Too often production, estimating and sales personnel seek extra time to do a job, even though the faster the job is done, the better the turnover position. If management is to improve its profits, it must insist that the trading cycle be completed as quickly as possible.

Two ratios are critical in analyzing the management or rapidity of the cycle: inventory turnover and the collection period of receivables. It is imperative that a printer understand how these two ratios operate and try diligently to operate them. The other ratios, printing companies that have been sliding down the profit line have climbed back up to a healthy position by improving their turnover. (For example, one printing company turned several years ago analyzed its operations only to discover that the collection period for receivables was approaching 90 days. After management installed tighter credit policies and began to monitor collection procedures more closely, it took only a short while to reduce the collection period to 50 days and eliminate a major portion of the short-term debt.)

Let us now analyze each current asset, generally, and then more specifically to see how Printemps' ratios compare to the industry as a whole.

CASH

There is no one rule about the amount of cash a company should have on hand. The only thing certain is that having either too much or too little is likely to cause problems. A profitable company will have a surplus of cash after expenses. Conversely, a company facing financial loss will be pushed into using whatever cash it has to cover expenses. Similarly, a printing company in a growth stage will need more cash for plant investments and debt commitments and for building up sufficient inventories than will an established company. Historically, Profit Leaders maintain approximately 10% of their total assets in cash. Your company may need more or less, depending on its present situation.

CASH CONTROL

Cash control is particularly important to a printer since almost every transaction will eventually result in either receiving or disbursing cash. Because cash is easily concealed and very liquid, it is more susceptible to theft or misappropriation than any other asset. Therefore, it is incumbent on management to maintain adequate control and accountability for its cash. It is up to the printing manager to insure that the following procedures are carried out:

1. Cash is recorded and deposited promptly after receipt.

2. All disbursements are made by check. (It is common for printers to have a petty cash fund for small expenditures that would be impractical to pay by check. Just make sure the expenditures are small.)

3. Persons dealing with cash should have segregated duties and be bonded. For example, the invoice preparer should not make bank deposits and the person writing checks should not reconcile bank statements.

At first glance, Printemps' cash ratio may make it appear that the Company has a cash deficiency because it has 7.83% less cash than the Profit Leaders. Yet, further analysis reveals that if both cash and receivables are totaled, the difference between Printemps and the Profit Leaders is only 1.83%. However, Printemps' cash as a percent of total assets may indicate a low receivable turnover and an inability to retain cash.

PERCENT OF TOTAL ASSETS

	Printemps	Profit Leaders	Variance
Cash	5.10%	12.93%	(7.83)%
Accounts Receivable	31.95	25.95	6.00
Total	37.05%	38.88%	(1.83)%

ACCOUNTS RECEIVABLE

There may be some reason for concern about Printemps' accounts receivable percentages. Remember, the balance sheet shows a company's financial picture at a particular point in time. Year after year, the PIA Ratios have shown that firms like Printemps have a higher ratio of receivables to total assets on their balance sheets than do Profit Leaders. A positive observation may be that the higher the sales, the larger the receivable balance. If sales were, in fact, increasing, there would be no cause for alarm, but usually that is not the case. High receivable balances may not necessarily be bad, but they should be investigated.

HOW FAST CASH IS COLLECTED

Let's delve further into accounts receivable ratios. The collection period of accounts receivable is an activity ratio indicating how effectively the company is collecting cash from its customers after sales are made. The sooner the printer collects the cash due, the sooner the money can be put to use -- to invest in more assets, to pay off liabilities, or to earn interest. As the collection period increases or decreases, it affects a company's cash, receivables, inventory, payables, and interest; in other words, it affects the company's entire operations.

The collection period is computed by dividing the average accounts receivable by the annual sales figure and then multiplying the result by 365.

$$\text{COLLECTION PERIOD OF RECEIVABLES} = \frac{\text{AVERAGE ACCOUNTS RECEIVABLE}}{\text{ANNUAL SALES}} \times 365$$

This ratio is indicative of credit and collection policies. Most printing firms have about one-sixth of their annual sales in accounts receivable. For example, if sales were $2,500,000, a typical firm would have $400,000 in accounts receivable. Reducing the collection period reduces the portion of assets in receivables and related interest costs.

PRINTEMPS' COLLECTION PERIOD OF RECEIVABLES..... 63.2 days

PROFIT LEADERS..... 58.0 days

Printemps' collection procedures need improvement in order to compare favorably with Profit Leaders. A collection period of 63.2 days is much too long. All printers, including Profit Leaders, should take every possible measure to shorten collection periods as much as possible. Some ways to do this are:

1. BILL CUSTOMERS DAILY, not at the end of the month as many printers do.
2. Offer effective incentives for customers to pay on time.
3. Seek good, credit-worthy customers.

Usually, a small percentage of a company's accounts receivable will not be paid, thus becoming bad debts. To show a better picture of receivables that will actually be collected, accounts receivable appear on the balance sheet with an estimate of losses deducted.

AVERAGE RECEIVABLES

The collection period ratio of receivables takes into consideration credit sales, although in most cases, in the printing industry there is little difference between credit sales and total sales. Very rarely do printers (with the exception of quick printers) have cash sales. "Average receivables" is the sum of beginning of the year receivables and end of the year accounts receivable balances divided by two:

$$\frac{\text{BEGINNING ACCOUNTS RECEIVABLE} + \text{ENDING ACCOUNTS RECEIVABLE}}{2}$$

A better average may be derived from using the beginning of the year balance plus the end of each month's balance divided by thirteen. The better the average, the more accurate the collection period computation.

INVENTORY

The printer's inventory is the sum of work-in-process, paper and other chargeable materials and supplies. Because the majority of a printer's sales are specialized, produced "to order" jobs, finished goods inventory may be small or non-existent.

While inventory may at first glance appear to be a simple and straightforward concept, inventory valuation methods vary among printers. The amount of a firm's inventory changes depending on the method used (FIFO, LIFO, etc.). Management must decide which practice is best for them.

Printemps' inventory represents 14.64% of its total assets, or 2.51% more than the Profit Leaders' inventory. It may or may not be carrying excessive inventory in stock. Either way, it should keep a perpetual inventory system and control and safeguard its inventory by taking an actual monthly count. Also, Printemps' manager should make sure there are sufficient funds with which to pay current liabilities and that too much cash is not tied up in inventory.

Earlier, it was mentioned that inventory turnover is a critical ratio in improving a printer's trading cycle and increasing profits. The equation is:

$$\frac{\text{COST OF MATERIALS SOLD}}{\text{AVERAGE INVENTORY}} = \text{INVENTORY TURNOVER}$$

Printemps	Profit Leaders
3.93	3.84

The cost of materials sold is taken from the income statement. Specifically, this includes paper and other chargeable material costs. Outside services, such as binding, are not included because they have no effect on inventory.

Some financial analysts will use sales rather than cost of materials in computing turnover. Since printers value inventories at cost, cost of materials sold gives a more accurate figure in calculating the ratio. Using the yearly average inventory is particularly important for printers because of the significant volume changes during the year.

A low inventory turnover indicates the possibility of a larger than necessary investment in inventory. A higher turnover implies better management and control. Printemps appears to be managing its inventory well.

WORK-IN-PROCESS TURNOVER

Work-in-process offers the greatest opportunity to improve inventory turnover. The faster a job is shipped out of the plant, the greater the profit potential and the more beneficial the effect on the company's capital position. The less time spent on a job, the less cash is tied up in inventory.

The formula for the work-in-process turnover is:

$$\text{WORK-IN-PROCESS TURNOVER} = \frac{\text{COST OF PRODUCT PRODUCED (MATERIALS, LABOR, OVERHEAD)}}{\text{AVERAGE WORK-IN-PROCESS INVENTORY}}$$

Some printers have a fast turn-around from the time an order is put into production to its finished state. These firms will have less work-in-process. Other printers, because of the nature of their work, have a much longer production cycle and will have a significantly higher work-in-process inventory.

PAPER AND OTHER CHARGEABLE MATERIALS INVENTORY

Paper and other chargeable materials represent a substantial part of a printer's inventory. Inventory turnover improves when inventory levels are optimized and the storage time of materials (primarily paper) prior to production is reduced.

$$\frac{\text{PAPER USED}}{\text{AVERAGE PAPER INVENTORY}} = \text{PAPER INVENTORY TURNOVER}$$

$$\frac{\text{OTHER CHARGEABLE MATERIALS USED}}{\text{AVERAGE OTHER CHARGEABLE MATERIALS INVENTORY}} = \text{OTHER CHARGEABLE MATERIALS INVENTORY TURNOVER}$$

OTHER CURRENT ASSETS

Because the percentages are usually small, other current assets seldom play a significant role in ratio analyses. Other current assets usually include various prepaid expense accounts such as insurance, taxes, etc.

PROPERTY, PLANT AND EQUIPMENT

As mentioned earlier, printing companies are highly capital-intense. New machinery costs are soaring; in many cases, used equipment is selling at prices approximating its original price tag. As a result, equipment usually makes up a large portion of a company's assets. These assets are not for sale but are used in the operation of the printing process. Property (with the exception of land), plant and equipment are depreciated over a period of time. The methods of depreciation vary; a printer usually uses one method of depreciation for tax purposes and another method for financial reporting (book) purposes.

For book purposes, a printer may depreciate assets using the straight-line method over the estimated useful life of the asset. For tax purposes, printers may use the accelerated cost recovery system (ACRS) percentages as well as other methods to depreciate buildings and improvements, furniture and fixtures, machinery and equipment and delivery vehicles.

	Printemps	Profit Leaders
NET PROPERTY, PLANT AND EQUIPMENT	38.93%	36.07%

Printemps' property, plant and equipment percentage is higher than that of the Profit Leaders. These percentages may vary considerably among different types of printers and different circumstances. For example, it may be advantageous for one printer to own his plant, while another printer living in a region with different real estate costs may be better off leasing his space. Machinery and equipment percentages may also vary widely depending on the processes different printers use.

More important than the percentage of fixed assets owned, Printemps' manager should consider the following:

1. Is equipment being operated at capacity?
2. Is the company using outdated, inefficient equipment?
3. Can extra space held for future expansion be temporarily leased?

OTHER ASSETS

Other assets are usually those which will not be converted into cash within a period of one year. They may include deposits, the cash surrender value of officers' life insurance and goodwill. Generally, other assets are not a significant part of the balance sheet.

LIABILITIES AND EQUITY

The liability and equity section of the balance sheet shows the distribution of each dollar of assets as follows:

LIABILITIES ($) ----------> OBLIGATIONS
EQUITY ($) ----------> OWNERSHIP

Liabilities are broken down into current and long-term liabilities. We will first examine the printer's current liabilities and then discuss long-term liabilities.

CURRENT LIABILITIES

Current liabilities are obligations that usually fall due within a period of a year and are paid out of current assets. They include obligations generated by the operating cycle, such as money owed to suppliers for the acquisition of material and supplies, collections billed in advance of delivery, employees' salaries, interest and principal payments due on notes, income taxes, and any other payable which is due in the next operating period.

	Printemps	Profit Leaders	Variance
Notes Payable	11.02%	3.67%	(7.35)%
Accounts Payable	13.63	11.27	(2.36)
Other Current Liabilities	10.49	12.17	1.68
	35.14%	27.11%	(8.03)%

After comparing Printemps' ratios with PIA Profit Leaders, it is obvious that Printemps, has too much short-term debt. If accounts receivable are not being managed wisely, a situation may arise where Printemps does not have sufficient cash to promptly pay its short-term creditors.

Other current liabilities may include payroll taxes due, employees' withholding taxes, sales tax collected, accrued expenses such as interest, business taxes, payroll and vacation payroll, income taxes payable and others.

One current liability that printing firms often handle poorly is "Advance Collections". The following example demonstrates how this account should be used.

A customer may ask for an advance billing and the printer records an Accounts Receivable and an Advance Billing account. If this situation still exists at the Balance Sheet date, the original entry is reversed and neither Accounts Receivable nor Advance Billing appears on the Balance Sheet.

When the customer pays, only the account "Advance Billing" is left, because the corresponding Receivable has been paid. In this case, it is necessary to reclassify the Advance Billing that has been paid as an Advance Collection. This Advance Billing situation occurs in many printing companies and proper accounting is important.

DEFERRED INCOME TAXES

Deferred income taxes arise when income and expense items are reported for financial accounting and tax purposes in different time periods. For the majority of printing firms the principal difference is the use of accelerated depreciation for tax purposes.

LONG-TERM DEBT

Long-term debt provides a major source of funds to finance a printer's assets. It includes debt to be paid some time beyond the current period. Most of a printer's long-term debt is in the form of bank loans, mortgages or leases; some large printers may issue bonds.

	Printemps	Profit Leaders	Variance
Long-Term Liabilities	26.28%	18.71%	(7.57)%

Again, Printemps' ratios show that it has too much debt. Perhaps Printemps' management has not pursued better financing methods. Has management considered issuing additional capital stock to obtain funds? Will Printemps be able to meet its financial obligations when they become due?

Printers have to be very careful in proportioning their debt. A typical conversation between a banker and a printer with a high debt ratio may go as follows:

Banker: "Don't come to us to finance Assets that should be funded from Shareholders' Equity. We are not shareholders and we are not going to cover your weak Equity position."

Printer: "What is this? You did in the past, and I have been taking all my Profits out of the business."

Banker: "Well, we are not doing it now and I doubt if we will ever get back to that. In fact, forget about future loans and get what you owe us paid up as soon as possible. We only want to lend our funds to companies with strong Equity positions."

Recommendations:

1. Hold your breath;
2. Maximize Profits;
3. Minimize Tax (LIFO/Accelerated Depreciation);
4. Maximize After Tax Retained Profits;
5. Build a strong Shareholders' Equity position.

EQUITY

A company's equity is its ownership interest. The term "Proprietor's Equity" is used to denote ownership of an unincorporated business. "Shareholders' Equity" is used when speaking of a corporation because all corporations are required to issue common stock. The term "Partners' Equity" is used for a partnership. Because most printing firms are corporations, this discussion will be about "Shareholders' Equity".

Shareholders' Equity may include the following accounts:

Common Stock
Preferred Stock
Additional Paid-In Capital
Retained Earnings
Treasury Stock

CONTRIBUTED CAPITAL

The term "capital stock" is sometimes used to designate all of a corporation's issued stock, both common and preferred. The capital stock value is computed by multiplying the par value (original face value) of each share by the number of shares issued. For example, if Printemps issued 2,500 shares of common stock and the par value is $10 a share, the total dollar value of common stock would be $25,000. (2,500 shares X $10 per share = $25,000.)

Stock does not necessarily have to be issued at par value. If shares are sold at a price higher than par, the additional funds received will appear as "Additional Paid-In Capital" on the balance sheet.

Preferred stock is another type of security a company may issue to generate funds. The issuance of preferred stock is optional and many companies issue no preferred stock.

RETAINED EARNINGS

Retained Earnings are a company's accumulated profits (and losses) that have not been paid out to shareholders as dividends. The earnings are reinvested in the company in the form of assets (cash, accounts receivable inventories, property, plant or equipment, etc.).

DEBT/EQUITY STRUCTURE

Printemps' ratio of Shareholders' Equity to all debt and equity is 38.58%. Its total debt ratio is 61.42%. The Profit Leaders' ratios are reversed -- their shareholders' equity percentage is higher than their debt ratio.

	Printemps	Profit Leaders
Total Liabilities	61.42%	45.82%
Shareholders' Equity	38.58	54.18

Many factors make it difficult to pinpoint the perfect debt/equity structure of a printing company -- the form of operations, the company's financial goals, the company's cost of capital, interest rates, etc. However, the printing industry trends show that Profit Leaders consistently have a larger percentage of equity than debt.

TOTAL EQUITY AS A PERCENTAGE OF DEBT AND EQUITY

	PIA Ratio Studies*				
	1985	1984	1983	1982	1981
All Firms	37.17%	39.32%	41.55%	42.18%	44.23%
Profit Leaders	50.42	55.25	57.89	54.88	54.08

* These ratios are from all firms reporting.

BALANCE SHEET

ASSETS	PRINTEMPS DOLLARS	PRINTEMPS % OF TOTAL ASSETS	PIA HIGH PROFIT STANDARDS ($5,000,000-$10,000,000) % OF TOTAL ASSETS	DIFFERENCE MORE (LESS)
CURRENT ASSETS				
Cash	$ 198,900	5.10%	12.93%	(7.83)%
Receivables	1,246,000	31.95	25.95	6.00
Inventories	571,000	14.64	12.13	2.51
Other current assets	158,700	4.07	8.84	(4.77)
TOTAL CURRENT ASSETS	2,174,600	55.76	59.85	(4.09)
PROPERTY, PLANT AND EQUIPMENT				
Real estate	400,500	10.27	12.27	(2.00)
Less: Accumulated depreciation	125,600	3.22	3.72	(0.50)
	274,900	7.05	8.55	(1.50)
Machinery and equipment	2,287,000	58.64	52.87	5.77
Less: Accumulated depreciation	1,138,400	29.19	27.53	1.66
	1,148,600	29.45	25.34	4.11
Other fixed assets	193,400	4.96	4.34	0.62
Less: Accumulated depreciation	98,600	2.53	2.16	0.37
	94,800	2.43	2.18	0.25
NET PROPERTY, PLANT AND EQUIPMENT	1,518,300	38.93	36.07	2.86
OTHER ASSETS	207,100	5.31	4.08	1.23
TOTAL ASSETS	$3,900,000	100.00%	100.00%	0.00%
LIABILITIES AND EQUITY				
CURRENT LIABILITIES				
Notes payable	$ 429,800	11.02%	3.67%	7.35%
Accounts payable	531,600	13.63	11.27	2.36
Other current liabilities	409,100	10.49	12.17	(1.68)
TOTAL CURRENT LIABILITIES	1,370,500	35.14	27.11	8.03
LONG-TERM LIABILITIES	1,024,900	26.28	18.71	7.57
TOTAL LIABILITIES	2,395,400	61.42	45.82	15.60
SHAREHOLDERS' AND PROPRIETORS' EQUITY	1,504,600	38.58	54.18	(15.60)
TOTAL LIABILITIES AND EQUITY	$3,900,000	100.00%	100.00%	0.00%

INTERRELATED RATIOS OF THE BALANCE SHEET

We will now examine ratios that interrelate between both sides of the balance sheet and, when evaluated with other ratios, offer significant information to the printing manager. Some ratios will include factors from both the operating statement and the balance sheet. These ratios provide the best information about the financial health of a company, if they are viewed together.

Four types of ratios will be used in analyzing Printemps' financial position.

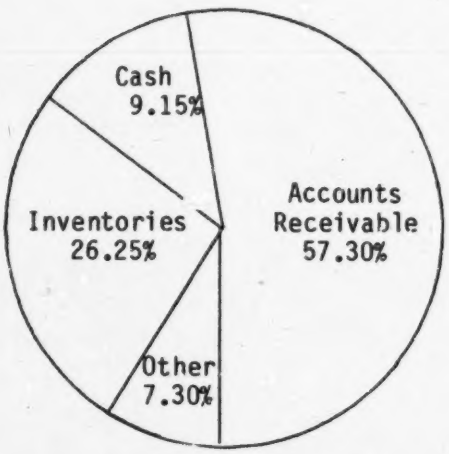
Type of Ratio	What It Does
1. Liquidity	Measures Printemps' capacity to meet short-term obligations.
2. Activity	Measures Printemps' effectiveness in using its assets.
3. Leverage	Measures Printemps' ability to meet short-term and long-term debt.
4. Profitability	Indicates Printemps' return on assets.

LIQUIDITY RATIOS OF WORKING CAPITAL

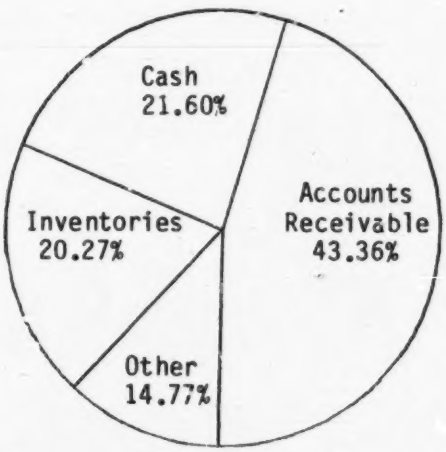
Working capital is composed of current assets. Adequate working capital is necessary for a company to meet current debts, carry sufficient inventories and take advantage of cash discounts.

WORKING CAPITAL
PERCENT OF CURRENT ASSETS

Printemps



Profit Leaders



These charts show that Profit Leaders have proportionately more cash and less receivables and inventory than Printemps.

The difference between current assets and current liabilities is called net working capital. Printemps' net working capital in absolute dollars is $804,100.

Current Assets	$2,174,600
Current Liabilities	1,370,500
Difference - Net Working Capital	$ 804,100

Is $804,100 enough working capital for Printemps to operate smoothly? Is Printemps liquid enough or does the company have excess liquidity? Does Printemps have too little cash? The following two ratios offer insight into the liquidity question.

CURRENT RATIO - The current ratio plays a key role in determining the adequacy of working capital by measuring a company's ability to meet short-term obligations. It is computed by dividing current assets by current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Printemps	Profit Leaders
1.59	2.21

Printemps' ratio of 1.59 means that for every dollar of current liabilities, there is $1.59 in current assets. Profit Leaders historically have had current ratios above 2 and this has been assumed to be satisfactory. Although in the past, many firms functioned well with a lower ratio, today's companies are being forced into longer conversion periods for inventories and longer collection periods for accounts receivable.

Printemps' current ratio of 1.59 may indicate a cash shortage. There seems to be inadequate coverage for its short-term debts, a situation that needs immediate improvement. On the other hand, a very high current ratio may indicate that the printer is not using funds wisely. The Company's assets may well be used more effectively elsewhere -- perhaps by acquiring additional machinery and equipment to expand operations.

Some people say that doing business with other people's money, called "trading on equity" is good business. This is rarely true. If the current ratio is diminished by too much debt, assets such as inventory, cash, etc., will not be available when needed. Also, when working with an excessive amount of other people's money, a demand for repayment in cash can prevent a printer from investing current assets profitably in his own business. It can prevent him from buying and discounting, and can affect his credit with financial institutions which, in turn, can deny him the purchase of fixed assets.

QUICK RATIO - A better liquidity ratio is the quick ratio, also called the acid test ratio. The quick ratio differs from the current ratio by eliminating inventories from the numerator, a process made feasible by the fact that inventories are the least liquid of current assets. The formula for the quick ratio is:

$$\text{Quick Ratio} = \frac{\text{Current Assets Minus Inventory}}{\text{Current Liabilities}}$$

Printemps	Profit Leaders
1.17	1.76

Printemps again shows the same weak position it showed in the current ratio; that is, it may be operating with a cash shortage. (One should note that a declining quick ratio may be normal for a company purchasing additional machinery and equipment with cash.)

ACTIVITY RATIOS

As stated earlier, activity ratios indicate the effectiveness with which a company uses its assets. Activity ratios discussed previously were the inventory turnover and the collection period of receivables.

LEVERAGE RATIOS

Leverage ratios reflect a company's total debt burden -- short and long term. A printing manager wants these ratios to compare favorably to industry ratios, particularly if his company is expanding and needs debt financing. These ratios are also important because they reflect already incurred interest expense as well as measure the relationship between shareholders' funds and borrowed funds.

Two debt to equity ratios printers should consider are analyzed below:

	Printemps	Profit Leaders
1. $\frac{\text{Total Liabilities}}{\text{Equity}}$ =	1.59	0.85
2. $\frac{\text{Long-Term Liabilities}}{\text{Equity}}$ =	0.68	0.35

The first debt to equity ratio means that for every dollar in shareholders' equity, Printemps has $1.59 in liabilities. Profit Leaders, on the other hand, have only $0.85 in liabilities per shareholder dollar. It's hard to say what the perfect combination should be. Interest and repayment requirements usually make the use of borrowed funds riskier than the use of ownership funds. Dividends to shareholders are usually at the discretion of corporate directors and invested capital does not have to be repaid.

The second leverage ratio measures the proportion of long-term debt to equity. Again, no one can say what the acceptable ratio is for a particular company. The ratio for Printemps is 0.68 and for all Profit Leaders is 0.35. Generally, the ratio has been steadily rising for all firms, and has been slowly decreasing for the Profit Leaders. This trend seems to indicate that the Profit Leaders are becoming more financially secure and that printing managers should maximize shareholders' equity as a source of funds.

PROFITABILITY RATIOS

The majority of profitability ratios lie within the income statement. However, one major profitability ratio measures the effectiveness with which the company's investment (found in the balance sheet) has been utilized in order to produce that profit. This ratio is called the Return On Investment and is discussed in a later section.

Significant facts in these ratios are often particularly important statistics for printers. They are as meaningful as financial statements, and are often the lowest common denominators which can be easily managed to produce higher profits.

INVESTMENT

The objective in this section is to analyze assets used per employee. From the information found in the significant facts section, you will note that High Profit companies generally invest more assets per employee. As sales volume increases, assets invested per employee also increase. Significant facts related to investment are defined and explained below.

Assets per Employee - All Employees	=	Assets (Net) / Number of All Employees	=	This ratio includes all assets -- current, fixed (net of depreciation), and others. It indicates the adequacy of the funds employed.
Assets per Factory Employee	=	Assets (Net) / Number of Factory Employees	=	This ratio is similar to the one above, but shows assets per factory employee.
Average Net Worth per Employee	=	Shareholders' Equity / Number of All Employees	=	This figure tells what part of the first ratio (assets per employee) is funded by shareholders' investment.
Average Gross Plant Investment per Factory Employee	=	Plant Machinery and Equipment (Gross) / Number of Factory Employees	=	This is a "key fact". It is obvious that the trend is toward more equipment per factory employee.
Net Worth Percentage of Fixed Assets	=	Shareholders' Equity / Fixed Assets (Net)	=	This ratio indicates the relationship between funding fixed assets and shareholders' equity. Fixed assets should never be funded with current debt, but with long-term debt and shareholders' equity. This equity should also fund about 50% of all assets -- an indication of funding strength.

SALES

The category of sales provides information on sales per employee. These statistics are determined twice -- once including executives and then excluding them. Here, we will address statistics excluding executives. The following sales proportions are particularly noteworthy:

Sales per Employee	= Sales / Number of All Employees	=	This is an invaluable number. The only better ones are the two ratios below.
Sales per Factory Employee	= Sales / Number of Factory Employees	=	This is a refined number of sales produced per factory employee.
Sales Less Materials per Factory Employee	= Sales Less Materials / Number of Factory Employees	=	This ratio is the Value Added per factory employee -- one of the most important ratios in the Ratio Study. You must know this number and plan to improve it; the end result will be improved profit.

EMPLOYEE DISTRIBUTION

This category of significant facts presents the percentage distribution of employees by departments. For example, for all firms reporting in the PIA Ratio Study, the distribution is as follows:

Factory	74.41%
Administrative	14.02
Sales	11.57
	100.00%

The most important fact here is the percentage of factory employees. A firm with too many factory employees and not enough administrative and selling employees would be a rare exception to the norm. Factory employees produce the product and their productivity generates revenue.

Often, a very simple observation serves as an indicator of productivity. Are there enough factory employees to produce the product, to support the overhead and provide a profit? This seems elementary but in many cases turns out to be a revelation. Note that the percentage of factory employees is about 70% for very small firms, and rises to approximately 83% of all employees for the largest firms. There is a specific characteristic for each sales class -- a very simple, but valid relationship.

SALES PER SALESPERSON

This ratio is computed as follows:

$$\frac{\text{Sales Produced by Salespersons}}{\text{Number of Salespersons}}$$

To use this ratio properly, you must be very specific in taking into account your sales volume as well as your product and process specialties. In analyzing the significant facts section of the book, All Printers By Sales Volume, note that sales per salesperson in a small firm ranges from about $66,000 to $150,000 and that the figure rises to $1,790,000 for firms with sales over $10,000,000. This rise occurs throughout sales classes. You must zero in on your sales class and relate your figures to the product and process specialties in the other PIA books in this series. Data for publications printing will differ from that for commercial printing, and data from web-offset companies will be different from sheetfed offset company data.

PAYROLL

Payroll statistics are computed first by including fringe benefits and executive compensation, and then again by excluding these factors. Thus, there is a separate section within this category for executive payroll.

The first item in this category is total payroll as a percentage of sales. This includes factory, administrative and sales payroll, and is computed as follows:

$$\frac{\text{All Payroll Costs}}{\text{Sales}}$$

This ratio is affected by a firm's size. Payroll as a percentage of sales shows a definite downward trend as the size of the firm increases.

The next ratio is factory payroll as a percentage of gross plant investment. It is computed as:

$$\frac{\text{Factory Payroll}}{\text{Machinery and Equipment (Gross)}}$$

On average, this ratio equals about $0.81 per year in payroll costs per dollar of gross plant investment. This is a very qualitative statistic and the absolute number requires further evaluation. Of course, more than an 81% ratio would be better if the company were fully equipped. In this case, there would be a maximum utilization of equipment. However, it is still possible to have over an 81% ratio as the result of inadequate plant facilities. In other words, the number doesn't tell the full story.

Payroll per employee. This category provides an absolute amount of payroll per employee and, more specifically, per factory, administrative and sales employee. These numbers are presented for "All Firms" and "Profit Leaders" in each sales class.

Note that, in some cases, Profit Leaders pay less per employee. However, one must put aside the notion that higher profit has to do with lower payroll costs. We have already established that Profit Leaders have a lower relative payroll cost, but that this is related to a higher capital investment per employee and a greater Value Added per factory employee.

A separate subheading in this category addresses payroll per executive for all employees, and then again, payroll broken down more specifically per factory, administrative and sales executive.

PROFIT

Gross profit percentage is computed as follows: first, determine your gross profit -- sales less the cost of goods manufactured. Then relate gross profit to sales.

$$\frac{\text{Gross Profit}}{\text{Sales}} = \text{Gross Profit as a Percentage of Sales}$$

	All Firms	
	All Firms	Profit Leaders
Gross Profit as a Percentage of Sales	23.70%	27.94%

Smaller firms require a higher gross profit percentage. In firms with up to about $5,000,000 in sales, the High Profit Standard is approximately 29% of gross profit. At that point, the gross profit required becomes less because of relatively lower administrative and selling expenses.

Many printers are searching for a mystical formula to produce high profits. That formula need not be as mystical as they think. There really is a way to produce a higher gross profit. The source of higher net profits lies in increasing gross profits. This directs us to:

- Pricing
- Material costing and control
- Increased Value Added per factory employee
- Expense control

The average gross profit per factory employee is an excellent lowest common denominator with which to gauge your profit performance. It is computed as follows:

$$\frac{\text{Total Gross Profit}}{\text{Number of Factory Employees}} = \text{Average Gross Profit Per Factory Employee}$$

Another interesting statistic is average net profit before taxes per employee. For All Firms, this figure is $3,326 as compared to $9,555 for Profit Leaders.

Income before taxes as a percentage of sales for all printing firms in the Ratio Study was 4.14%, compared with 11.79% for the Profit Leaders. The percentage for All Firms is much too low; it returns a dismal 7.65% on investment. High profit firms realize 15.65% Return on Investment.

After your bills are paid, where do you put your excess cash? Obviously, you put it where you can get the highest return, consistent with safety. If, for example, you could get 10% on U. S. Treasury Bonds you wouldn't be satisfied with a return of only 7%. Yet, a 7% Return on Investment is what the average printing firm produced in 1985. Printing managers cannot settle for such a low return if they are to keep their companies profitable.

Return on Investment (ROI) refers to the capital used to produce income. It is a very simple computation, analogous to figuring simple interest or introducing a time element involving alternate decisions and capital expenditures, or compound interest. Mathematically, ROI is:

$$\frac{\text{Income}}{\text{Assets}} = \text{Return on Investment (ROI)}$$

ROI - 1985 Ratios: All Firms - 7.65%; Profit Leaders - 15.65%

Return on Investment (ROI) incorporates the two major factors in measuring profits, income and investment, and therefore is considered the most comprehensive measure of profitability. There is often disagreement as to whether net assets or gross assets should be used to compute ROI.

ROI is gaining more and more acceptance as a measure of profitability in printing companies. This is due to the fact that printing is a capital intense industry and printing firms generally have high fixed assets against which their profit performance is measured.

The importance of ROI is evident from its history in the printing industry. Since ROI was introduced in the 1967 PIA Ratio Books, the Individual Computer Printout has been expanded to include ROI, an entire annual PIA financial meeting has been devoted to the concept, and PIA conducted a special historical case study on ROI. This study revealed a decline in investment turnover and showed the effect of this on the ROI rate when there is not a corresponding increase in profit as a percentage of sales.

PIA has remained a strong advocate of the ROI concept and consistently urges that its members become familiar with it and use it to measure their company's performance.

DEFINING RETURN ON INVESTMENT

The ROI ratio produces, as a percentage, an annual rate of return on assets used to produce income. It is the same as an annual interest rate that one would receive on a bond or other type of investment.

The simple ROI formula is a reduction of the following ratios:

$$\frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} = \text{ROI}$$

The first fraction is income as a percentage of sales. This is the percentage to which you must pay particular attention in order to improve your ROI. We will discuss this further under the heading "Return on Investment Dilemma."

The second fraction is called "investment turnover" or "asset turnover." The term "investment" in this context refers to assets used to produce earnings.

The "sales" in the denominator of the term "income as a percentage of sales" and the "sales" in the numerator of "investment turnover" can be cancelled. We have already done this in order to obtain the simple expression "Income over Assets." However, it is still best to think of these two fractions as dynamic elements in ROI management.

Here is an example of an ROI computation:

Sales	$1,000,000
Profit Before Taxes	120,000
Assets	500,000

$$\frac{\$\ 120{,}000\ \text{Income}}{\$1{,}000{,}000\ \text{Sales}} \times \frac{\$1{,}000{,}000\ \text{Sales}}{\$\ 500{,}000\ \text{Assets}} = \text{ROI}$$

$$12\% \times 2 = 24\%\ \text{ROI}$$

In the PIA Ratios, income is...

...income before interest expense, other income and taxes.

Assets are...

...gross assets employed before deduction of accumulated depreciation and amortization.

As these are not necessarily commonly used definitions, we will discuss them in more detail.

Income Before Interest, Other Income and Taxes. Our terminology refers to income as income before interest, other income and taxes. Most published studies base ROI on after-tax profit. The reasoning is that taxes are expenses, just like any other expenses. However, since the amount of tax varies so widely from one situation to another, computing ROI before taxes provides a more meaningful standard.

By using profit before interest expense, we are able to compare the return on investment from operations, excluding interest which is considered to be a cost of raising capital.

For example, if your return on investment is 25% and your cost of interest is 17%, it pays to borrow funds which will, in turn, produce a greater return. By the same token, it would not pay to borrow funds at an interest rate greater than your ROI. You can see that, if interest were deducted from profit, it would not be valid to compare your return on investment with the cost of capital to determine whether an ROI decision is valid.

Non-operating income and expenses normally are excluded from our calculations. It is important that you remove non-operating assets from your investment figure as well.

DEPRECIATION

Some printers, for financial or tax reasons, compute depreciation by accelerated depreciation methods. This produces higher depreciation in the early years of an asset's life than does the straight-line method. If accelerated depreciation is used, the excess depreciation should be added back to profit in order to compute ROI.

Since accumulated depreciation is not deducted from fixed assets in arriving at total investment or assets, some people theorize that depreciation should not be deducted from income for ROI purposes. This concept, though, does not have too many advocates.

VALUATION OF ASSETS

There are four ways to look at asset-valuation bases:

- Gross Assets at Book Value - Assets are at their original cost without deduction for accumulated depreciation.
- Net Book Value - Assets are valued at original cost less accumulated depreciation.
- Replacement Value - This is the same as Gross Assets, but adjusted for the difference in their replacement cost.
- Market or Actual Cash Value - Similar to Net Book Value, but asset costs have been changed to reflect replacement cost less the proportional accumulated depreciation.

Each of these ways of valuing fixed assets has considerable merit. The Replacement Value and the Replacement Value less Accumulated Depreciation are approaches you may want to use on your own as they can be very meaningful depending on your circumstances and objectives. For internal management purposes use the most accurate value of your equipment that you can. In these PIA Ratio Studies, however, we are limited to determining ROI by Gross Assets at cost and Net Book Value.

NET ASSETS VS GROSS ASSETS

ROI has substantially different results when computed on Gross vs Net Assets. For a number of years, PIA Ratio Studies have been computing ROI based on Gross Assets. This is the so-called DuPont method, which has the advantage of alerting management when ROI begins to decrease and equipment needs to be replaced.

Under the Net Asset method, a higher ROI may justify continued use of existing equipment. The Gross Asset basis has its purpose, but is not as accurate as the Net Asset Method.

ROI based on Net Assets is computed as follows:

$$\frac{\text{Income Before Taxes, Interest, and Other Income or Expense}}{\text{Assets Less Accumulated Depreciation}}$$

For "All Firms," this is 10.99%; for "Profit Leaders," 21.27%.

The net asset method may produce a more valid operational ROI and a more accurate computation.

WHAT IS A FAIR ROI?

The "All Firms" ROI of 7.65% on gross assets and 10.99% on net assets is hardly adequate to justify investment. The "Profit Leaders" ROI is 15.65% on gross assets and 21.27% on net assets. The high-profit companies appear to achieve an ROI more commensurate with the economic risk.

There are substantial risks in the printing industry and, therefore, the return related to that risk should be significantly higher than prevailing interest rates. Generally, a fair ROI should exceed 20% on a new-asset venture, or 30% on net assets.

RETURN ON INVESTMENT DILEMMA

Since ROI is computed by multiplying "income as a percentage of sales" by "investment turnover," it would appear that we could increase our ROI by increasing one or the other factor, or both. This is true, but first a little background is necessary. We will limit our statistics to the Profit Leaders.

The investment turnover for Profit Leaders in this year's Ratio Study is 129.87%. This means that these firms achieved $1.30 in sales for each $1.00 of assets employed. Let's look at the historical record of investment turnover.

This year	129.87%
1984	131.54
1983	131.84
1982	141.56
1981	142.49
1980	141.42

Until 1982, the investment turnover remained fairly steady. Since then, however, there has been a downward trend in the investment turnover. Interspersing capital cost of printing equipment accounts for this downward trend. By comparison, the income for the Profit Leaders has remained fairly level during this period. Therefore, as the cost of equipment increases, the need for an increased level of income becomes apparent if a fair return on investment is to be achieved.

This can best be explained with an example:

	Old	New
Equipment	$ 50,000	$200,000
Investment Turnover	200%	140%
Desired Return on Investment	20%	20%

Return on Investment = Investment Turnover x Profit as a % of Sales.

					Profit Needed As A % Of Sales
ROI	=	Income / Sales	x	Sales / Assets	
Old 20%	=	$ 10,000 / $100,000	x	$100,000 / $ 50,000	10%
New 20%	=	$ 40,000 / $280,000	x	$280,000 / $200,000	14.3%

To maintain the desired 20% ROI, one would need a profit of 14.3% on sales with the new equipment, as opposed to a 10% profit on sales with the old equipment.

There are two traps to avoid in ROI:

1. When you increase the assets you employ, you must also increase your profit as a percentage of sales to maintain a fair return on investment. If you don't, your ROI may be diminished.

2. Your new selling price with a higher profit mark-up may still be lower than your price using the old equipment. The new equipment should produce a lower unit selling price despite the higher cost rates and higher required margin. If this were not true, there would be no economic justification for replacing old (less capital intense) with new (more capital intense) equipment.

YOUR ULTIMATE GOAL: THINKING ROI

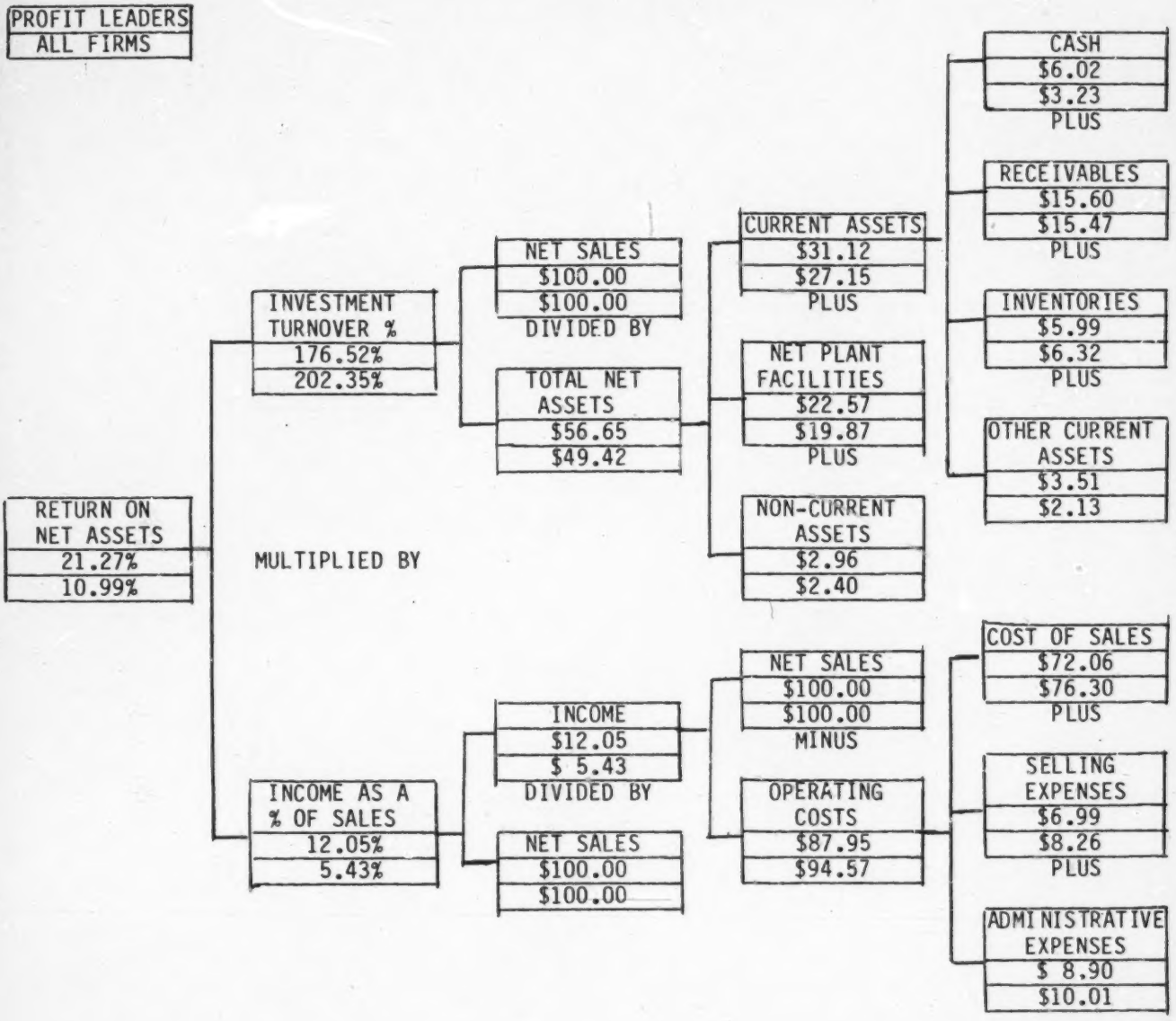
Thinking ROI is like working backwards. Thus, a competent printing manager might plan along these lines:

1.	Capital to be employed		$400,000
2.	Desired ROI: 20% of capital employed		80,000
3.	Sales to be achieved from new assets employed: 140%		560,000
4.	Required profit as a percentage of sales:	$ 80,000 / $560,000	= 14.3%

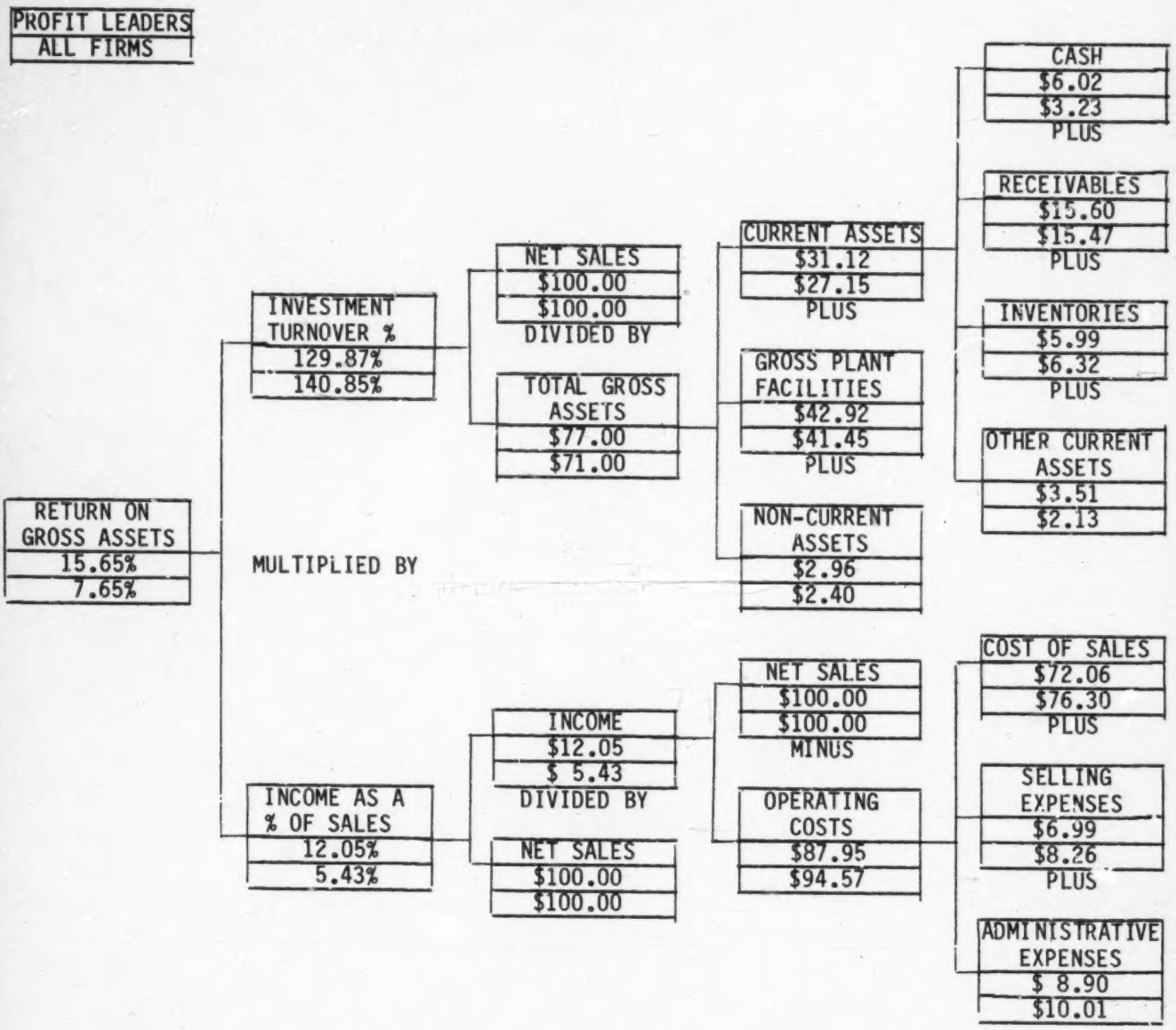
This example shows that you must strive for a 14.3% profit on sales to produce a 20% ROI on the capital you employ.

In conclusion, while profit as a percentage of sales must be maximized, make every effort to increase the investment turnover and thus derive a strong Return on Investment.

RETURN ON INVESTMENT CHART - BASE: $100 OF SALES (NET ASSETS)



RETURN ON INVESTMENT CHART - BASE: $100 OF SALES (GROSS ASSETS)

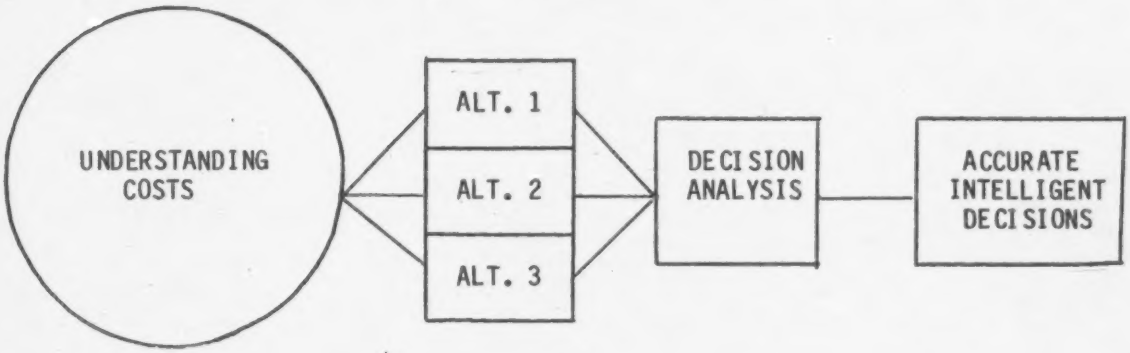


SECTION 3 - MEANINGFUL TOPICS RELATIVE TO THE GRAPHICS ARTS INDUSTRY

A BREAK-EVEN ANGLE TO COST/VOLUME/PROFIT

Costing and pricing decisions can "make or break" a printing manufacturer. The printer is constantly faced with decisions about selling prices, fixed costs and variable costs. These decisions can be made intelligently if the printer understands fully and utilizes pricing techniques and cost-volume-profit relationships. Of course, some factors the printer cannot control. Competition and market pressures will influence pricing decisions; likewise, although costs do not determine the sales price, they do influence what that price will be. Understanding cost behavior prepares the printer to make accurate predictions, thus insuring good pricing and other financial management decisions. Utilizing these concepts, a printer is more likely to be able to answer questions such as:

What printing techniques are most profitable?
Are we charging enough?
Should we concentrate on web sales?
Are we getting "the most" out of our press?
Could we expand? Should we expand?



COST KNOWLEDGE

The printer equipped with good cost knowledge will be able to manage and control expenses more efficiently. The springboard to understanding cost behavior is break-even analysis. Throughout this discussion, keep in mind that printing is highly specialized and normally does not have "shelf items" to sell. Also, recognize that break-even analysis may be of more benefit to some printers than others, but that all will be able to utilize its basic concepts in making good financial decisions. A printer may use the analysis on a job-by-job basis to determine whether to accept or reject certain jobs or may use it to project operating results for the entire company for a year. Similarly, the analysis may provide good answers to other key questions.

BREAK-EVEN POINT

Narrowly defined, the break-even (B/E) point is the point at which sales and expenses are equal, or, in other words, profit is zero.

B/E POINT: SALES - EXPENSES = $0

Do not misconstrue the term "break-even analysis". A printer obviously wants to do more than break even or he would not consider being in business. Breaking even is only the beginning of the basic principle underlying costing and pricing. Break-even analysis encompasses much more than breaking even. It can determine what volume of printing must be generated and sold in order to reach a desired level of income. It can also determine which jobs are profitable, and which are not.

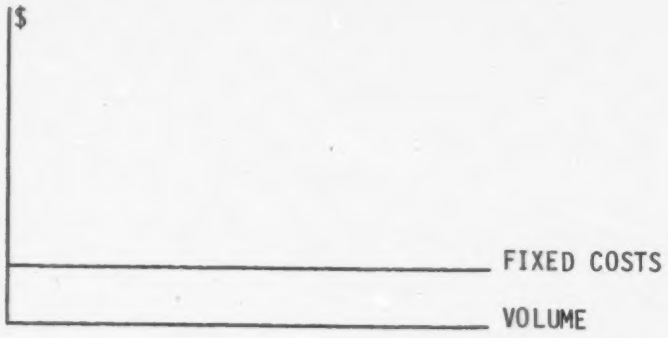
Before we investigate the break-even point further, however, let's consider two terms "sales" and "costs". The term "sales" needs no explanation; the more the better. Fortunately, printing sales volume has been on an upward trend and is expected to continue so. Unfortunately, costs are also rising. This is the area we must understand and manage effectively in order to stay ahead.

COSTS

A printing manufacturer has numerous costs. Some of them will vary in direct proportion to the volume of printing produced. Others remain relatively fixed in amount over a period of time. Some expenses contain both variable and fixed elements. It is important for the printer to segregate these costs to understand how they influence profits.

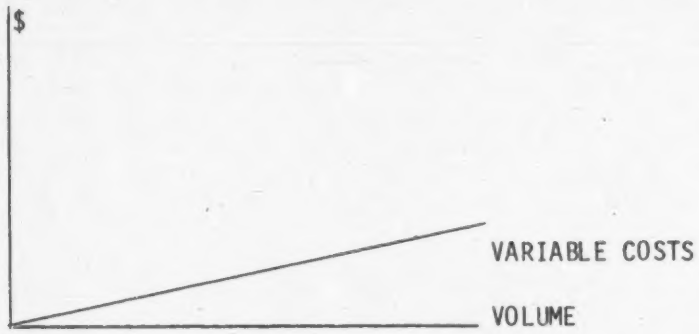
Fixed Costs

Fixed costs are expenses that remain the same regardless of the level of output over a period of time. Rent, depreciation, supervisors' salaries and real estate taxes are but a few examples. Factory expenses included in the PIA Ratio Study have their fixed elements segregated. (See PIA supporting Schedules in the Income Statements.)



Variable Costs

Paper, ink and direct wages are examples of a printer's variable costs. As the volume of printing rises, these costs will rise proportionately.



Mixed Costs

Caution. Recognize the fact that over a period of time some expenses cannot be compactly placed in the fixed or variable category. There are expenses that may vary with production at a certain point in time, but not in direct proportion. For example, one printing supervisor may be sufficient to oversee the work of the press department up to a certain point of production. If sales volume increases so that additional material and labor are necessary, a second supervisor may have to oversee the additional volume of printing.

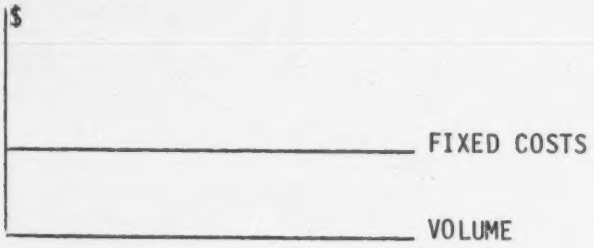
Conversely, if the volume of printing decreases, but only temporarily, there may be no need to reduce production staff. Yet, if the decrease in volume is considered permanent, a supervisor may have to be terminated. Therefore, in the short run, supervisory salaries are considered fixed; in the long run, they may be variable.

For this analysis, we will assume all costs can be classified as either fixed or variable. Normally, within a period of a year, one can accurately predict fixed and variable costs.

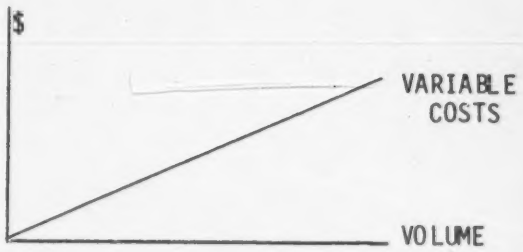
GRAPHING COSTS AND SALES

Combining fixed and variable costs on a graph together with the sales line emphasizes the break-even point. Graph number 4 below shows that once the break-even point is reached (fixed costs are covered) in sales volume, additional sales produce profits.

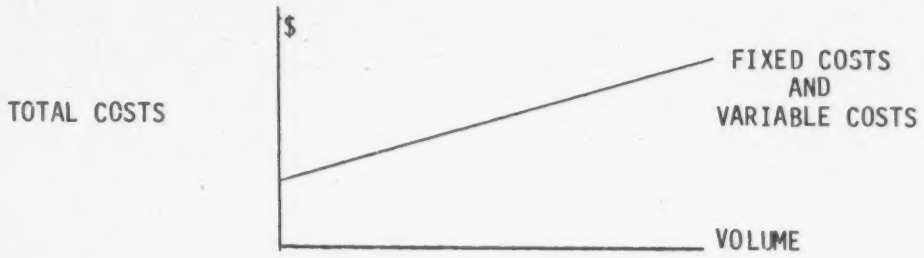
1. Fixed Costs



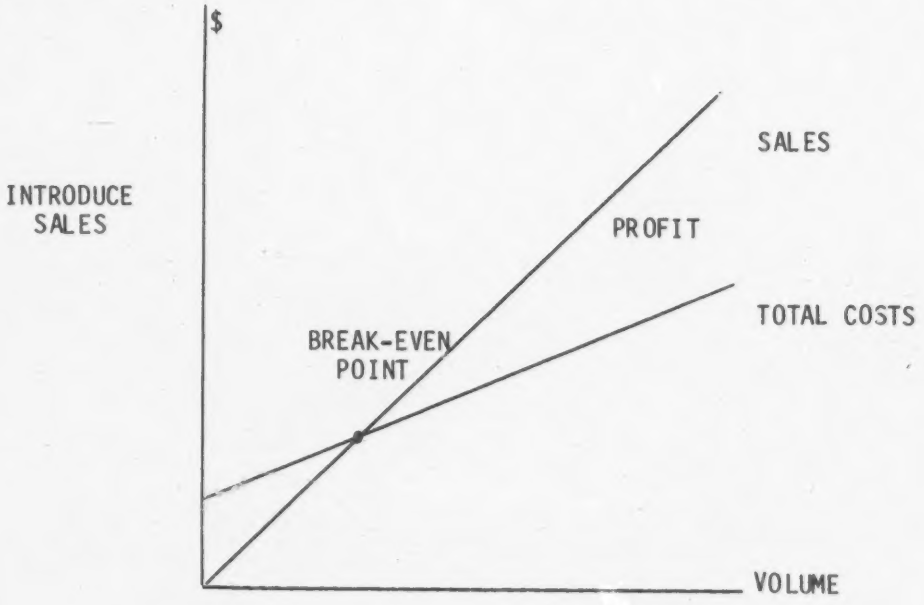
2. Variable Costs



3. Fixed and Variable Costs Combined



4. Break-even Graph



The above graphs assume that volume is the only factor influencing cost. Remember, other factors also influence costs and sales.

BREAK-EVEN ANALYSIS

What volume of printing must be sold to break even? What volume of printing must be sold to reach a target level of income? In printing, volume may be based on units (or thousands of units) of production, impressions per hour, dollar volume of sales, or other measures. For our simple illustration below, we will assume volume is based on thousands of units of production.

> Printer Ken would like to know what volume of printing he needs to break even. He has segregated his fixed and variable costs for the preceding year and has estimated what they will probably be in the current year. He has found that his total fixed costs will be approximately $500,000. His average sales price is $250 per thousand of units produced and his variable costs are $175 per thousand of units produced.

To find Ken's break-even point, he would use the break-even point equation and let X equal the number of thousand units needed to break even.

B/E Equation: UNIT SALES (in thousands) = VARIABLE COSTS + FIXED COSTS

$250X = $175X + $500,000

X = 6,667 THOUSANDS OF UNITS

So, Printer Ken would need to sell 6,667 thousands of units (or 6,667,000 units) of printing to break even.

> Now, Printer Ken would like to know what volume of printing he needs to match the average PIA Profit Leader's income level. (Historically, PIA Profit Leaders achieve an average of 12% income before taxes as a percentage of sales.)

The equation he will now use is:

UNIT SALES (in thousands) = VARIABLE COSTS + FIXED COSTS + DESIRED INCOME

$250X = $175X + $500,000 + .12($250X)

X = 11,111 THOUSANDS OF UNITS

Therefore, if he sold 11,111,000 units, he should expect his income before income taxes to be 12%.

Keep in mind that Printer Ken's break-even analysis was based on a particular set of assumptions. If his conditions change, a whole new set of cost-volume-profit relationships would appear.

OTHER APPLICATIONS OF BREAK-EVEN ANALYSIS

Break-even analysis may also provide other helpful information, particularly in budgeting and forecasting. Printer Ken may be considering a new plant layout and expansion. If he follows through with this plan, his fixed and variable costs may change considerably. To find out how much, he could plot his various levels of expected production along with expected changes in his fixed and variable costs and analyze results at different levels of production.

He may also use the break-even approach on a job-by-job basis. Some jobs will be accepted for reasons other than profit. Yet, to predict exactly how much income a particular job is adding to profits, the break-even approach is highly enlightening.

THE INVENTORY DECISION - LIFO VS. FIFO

Printers struggle to beat the battle of red ink and produce a profit. Lately, however, a hidden pirate has been gnawing away at after tax income: namely, the higher replacement costs of materials and supplies.

A printer claims a 12% profit on a $1,000 sale if expenses - including materials, supplies, factory payroll and overhead, as well as administrative and selling expenses and interest, total $880. But is this printer really left with a 12% or $120 profit? In manufacturing his product, he used a large dollar volume of materials and supplies, and now he must replace them. Meanwhile, though, the purchase price has risen. Where does the additional money come from? The obvious answer is that the replacement cost must be pilfered from the $120 profit.

Proper inventory accounting methods for materials and supplies can save printers substantial tax dollars. These lowered taxes translate into money that can be used to stave off high replacement costs. And the more material and supply prices increase, the more tax dollars are saved.

The two most common inventory methods in use today are FIFO (First-In, First-Out) and LIFO (Last-In, First-Out). Both methods are accounting tools to describe the flow of materials and supplies. They do not, though, have an effect on the actual placement of materials and supplies into manufacturing.

The majority of printers operate under FIFO inventory, which provides them with higher end of the year after tax profits on the books than does LIFO. Unfortunately, this is "fool's profit". LIFO, on the other hand, shows lower profits on the books, and consequently, results in lower taxes.

The FIFO system theorizes that a printer uses materials and supplies that were purchased a long time back -- when prices were lower. Recently purchased goods (bought with higher prices) are said to be the last to go into production and, therefore, are inventoried at a higher price. Since material and supply costs are deducted from sales (along with other costs of operating a business) in order to determine pretax profits, these low expenses will bounce profits to a false higher level.

At first glance, the high profits may appear appealing. But remember, corporate taxes are calculated on profits. In effect, what you're doing is reporting too high a profit to the IRS much in the same way as if you had understated your selling and administrative expenses.

Valuing inventory with the LIFO method means that, in theory, a printer places his most recently purchased materials and supplies into production first. Again, during inflationary times, the most recent purchases represent higher dollar figures than do earlier purchases.

These high valued cost factors result in a more realistic, lower profit. In turn, less taxes are levied and the printer is left with more money available to help offset his rising costs.

Remember, as a practical matter, FIFO and LIFO only represent the hypothetical flow of goods through your plant and, in reality, there is no difference in real pretax profits in the two inventory pricing methods. While reported profits are likely to vary significantly, your true profits (before taxes) are the same. In both methods, the exact same amount of pretax cash (income and expenses) flows in and out. The only difference is the total taxes levied. FIFO followers will pay more tax dollars than their LIFO counterparts.

Furthermore, as prices climb, the difference between FIFO and LIFO users' tax payments increases correspondingly. LIFO users will be left with the increased value of work in process (materials and supplies) untaxed. This untaxed increased value is usually sufficient to pay for inventory replacement. The FIFO taxpayer does not have this advantage.

The example shown on page 72 demonstrates exactly how significant the tax savings can be for a printing firm opting for LIFO over FIFO. In both cases, all reported income and expenses are exactly the same -- with the notable exceptions of materials and federal income taxes.

Using FIFO, the printing firm with $1,000,000 in sales values its inventory on a first-bought, first-used basis. This means that the company is reporting that the materials it places into production were purchased back when prices were lower than they are today. The $350,000 figure entered for materials will not buy the same volume of materials in the current market.

Converting to LIFO inventory, the same company saves $9,200. The printing firm reports that the materials required to produce its $1,000,000 in sales were valued at the current (most recently purchased) market price and not necessarily at the actual price paid for them. The LIFO method shows that $370,000 worth of materials were used, some $20,000 over what the same company reported under FIFO.

The $20,000 in materials drops income before taxes down by, naturally, $20,000. In effect, the figure shows that the LIFO system leads to lower ($9,200, in this example) taxes.

Assuming that the printer is going to replace all of his used materials, his actual costs will come much closer to the $370,000 figure shown in the LIFO approach than to the $350,000 in the FIFO entry. Under FIFO, the company will have to pluck $20,000 from its after tax profits and add it to its reported $350,000 materials used in order to replace the goods; this decreases the $84,000 to around $64,000, or $9,200 less than the $73,200 produced by the LIFO method.

This $9,200 is not merely an "on paper" savings. Rather it is a cash in the bank savings achieved by lower tax payments. If material costs (most recently purchased) had increased more than the $20,000 our example indicated, it's not hard to see how an even greater tax savings would have occurred. Graphic arts firms are foolish to continue to report high profits realized under the FIFO method and should take immediate steps to convert to the more favorable pretax profits enjoyed by LIFO users.

Because LIFO generally represents a change in inventory planning for graphic arts executives, questions about the method naturally arise. The following exchange is a sampling of some of the most commonly asked questions.

Q. How does a printing firm switch from FIFO to LIFO?

A. All you have to do is file Form 970 with Internal Revenue Service explaining exactly what your inventory method entails. You don't have to receive permission; you just sit back and collect the tax benefits.

Q. Wouldn't you be less likely to receive a bank loan using LIFO instead of FIFO? After all, your profits are lower!

A. Bankers are aware of the difference FIFO and LIFO make in profits. They can easily adjust, either up or down, the reported profit figures from both methods.

Q. How far back can you go when valuing inventory under LIFO? 2 years? 10 years? 50 years?

A. In the year that your conversion takes place, you use the previous year's ending inventory as your beginning. Any increases in inventory would come in beginning of the year purchases. Then, at the end of the next year you go back to that base, which is now two years old, as your starting point. If both you and your business last another 50 years, in 2035 you start your inventory with the tier that came in January 1, 1985.

Q. Do we have to keep our inventory records at these LIFO values? What good are my paper and work-in-process inventories at prices that I paid in 1975?

A. If you keep your cost sheet at current hourly rates and your perpetual paper inventory at current prices, you can turn your FIFO inventory over to your accountant for conversion to LIFO using the index factors.

Q. If you're going to sell your business, wouldn't you lose money by not using the FIFO system? Under LIFO, your profit is lower and the inventory on the balance sheet is lower.

A. First of all, you should operate your business as efficiently as possible -- not merely to report "fool's profits". But, if you do want to sell, you explain to your buyer how your inventory method works. Then, you sell your inventory at the current replacement cost and not at your LIFO value.

Q. Can I price all inventories by the LIFO method including work-in-process, paper, other chargeable materials (ink, film, plates and others), and non-chargeable supplies?

A. Yes. You are talking about big dollars and in a growing firm this amount keeps increasing. The LIFO inventory reserve gets bigger and the tax saving accumulation becomes more substantial.

FIFO VS. LIFO: COMPARISON OF PROFIT AND TAXES

	FIFO METHOD	LIFO METHOD
SALES	$1,000,000	$1,000,000
FACTORY COST OF PRODUCT		
MATERIAL*	350,000	370,000
FACTORY PAYROLL	260,000	260,000
FACTORY EXPENSES	106,000	106,000
	716,000	736,000
GROSS PROFIT	284,000	264,000
ADMINISTRATIVE AND SELLING EXPENSES	160,000	160,000
	124,000	104,000
INTEREST	10,000	10,000
	114,000	94,000
OTHER INCOME	6,000	6,000
INCOME BEFORE TAXES	120,000	100,000
FEDERAL INCOME TAXES	34,950	25,750
AFTER TAX PROFIT	$ 85,050	$ 74,250

* COST OF MATERIAL USED

INVENTORY - JANUARY 1	$ 150,000	$ 150,000
PURCHASES	360,000	360,000
	510,000	510,000
	(320,000 lbs. @ $.50)	(320,000 lbs. @ $.4375)
INVENTORY - DECEMBER 31	160,000	140,000
COST OF MATERIAL USED	$ 350,000	$ 370,000

Using the FIFO method, this printing firm valued its cost of paper at the most recent purchase price, $.50 per pound. Under LIFO, the same firm valued its paper at the earliest purchase price, $.4375 per pound. The FIFO system generates a "fool's profit" of $10,800 over the LIFO technique, while the LIFO inventorying method saves $9,200 in taxes.

1985 BUSINESS AND PERSONAL USE OF AUTOMOBILES

Automobile recordkeeping regulations have now been finalized by the Internal Revenue Service and we present below the most important features of the revised regulations.

The need for "contemporaneous" recordkeeping is eliminated completely. Thus, for tax years beginning after 1984, the "old" rules are in effect under which expenses and credits can be substantiated either by adequate records or by sufficient evidence, oral or written, corroborating your own statements. The "old" rules apply in 1985 only to away-from-home travel. Local travel will come under these rules starting in 1986. What are the "old" rules? With respect to any expenditure, the time and place of travel or entertainment, or the date and description of gift, is necessary. Additionally, the business purpose of the travel, entertainment or gift should be recorded as well as the business relationship of each person entertained or to whom a gift is given.

Although there is no longer any need for "contemporaneous" recordkeeping, some type of records must be kept by users of company furnished automobiles to indicate the personal miles used on a business car. (We'll discuss below the reasons for this.) These records can be eliminated entirely under the following circumstances:

A. If the employer has a written policy statement indicating that, other than for de minimus personal use, the car is used entirely for business purposes and will be housed on the employer's premises when not in use.

B. With regard to commuting, the employer must require the employee to commute for business reasons and must include in the employee's gross income $3 per day for each day the employee commutes to and/or from work.

C. Please note, the $3 per day commuting gross income does not apply to officers or 1% owners of businesses.

For 1985 income tax reporting, there will be a number of questions to be answered relating to personal and commuting mileage, total mileage, etc. Corporations who furnish cars to their employees must obtain this information from the employees not only for answering these questions on the corporate tax return, but also to establish the dollar value of the personal use of the car in order to report additional compensation for the employee.

For tax years beginning after 1985, any vehicle which, by reason of its nature, is unlikely to be used for more than a minimal amount for personal use is exempt from recordkeeping of any kind. Examples given are: forklifts, cement mixers, dump trucks, garbage trucks, etc.

There have been significant changes in both the Investment Tax Credit and depreciaton of automobiles. Investment tax credit for passenger automobiles is reduced to a maximum of $675 ($450 if a reduced investment tax credit is elected). Depreciation is limited to a maximum of $3,200 for the first year and $4,800 per year thereafter. This applies to "passenger automobiles" -- meaning any four-wheeled vehicle for use primarily on public streets rated at 6,000 pounds gross vehicle weight or less.

For cars purchased between June 19, 1984 and May 2, 1985, the original rules of the Tax Reform Act of 1984 apply. (Under those rules, investment tax credit was limited to a maximum of $1,000 and depreciation to a maximum of $4,000 the first year and $6,000 per year thereafter.) All of the above limits are subject to further reduction for the percentage of personal use applicable to each vehicle and if any vehicle is used less than 50% for business, no investment tax credit is permitted and only straight-line depreciation over a period of five years is permitted.

The Internal Revenue Service has provided a method of determining the value of the personal use of an automobile. Regulation 1.61-2T provides, in general, that the recipient of a fringe benefit must include in gross income the amount by which the fair market value of the fringe benefit exceeds the amount paid for the benefit (if any), and the amount specifically excluded from gross income by other sections of the Internal Revenue Code. However, the Internal Revenue Service has provided a special rule under Regulation 1.61-2T described as the "Annual Lease Value" table. An employer may elect to use this table in determining the annual amount to be charged to an employee for his personal use of an automobile. The table provides a gross annual lease value based upon the automobile's fair market value on January 1, 1985. (For cars on hand at January 1, 1985 we suggest using the "Blue Book" auto dealers' value.) The gross annual lease value is then multiplied by the percentage of personal use of the automobile to determine the dollar amount to be included in the employee's W-2. The Annual Lease Value Table is shown below.

Not only has the Internal Revenue Service determined how much must be considered additional compensation for your personal use of a company car, they have also decreed that taxes must be withheld from such amounts. Normally, income and other employment taxes must be withheld for each pay period. The employer may elect, however, to withhold quarterly, semi-annually, or annually. One major exception is -- the employer may elect <u>not</u> to withhold income taxes (but must withhold FICA) on the value of personal use of an employer-provided automobile. The employee must be notified of the employer's election and the value of the personal benefit must be included in the employee's W-2. The employee of course, can change his withholding tax by submitting a new W-4 form to his employer in order that additional taxes will be withheld to cover the additional compensation for personal use of company cars.

ANNUAL LEASE VALUE TABLE

AUTOMOBILE FAIR MARKET VALUE	ANNUAL LEASE VALUE
$ 0 - 999	$ 600
1,000 - 1,999	850
2,000 - 2,999	1,100
3,000 - 3,999	1,350
4,000 - 4,999	1,600
5,000 - 5,999	1,850
6,000 - 6,999	2,100
7,000 - 7,999	2,350
8,000 - 8,999	2,600
9,000 - 9,999	2,850
10,000 - 10,999	3,100
11,000 - 11,999	3,350
12,000 - 12,999	3,600
13,000 - 13,999	3,850
14,000 - 14,999	4,100
15,000 - 15,999	4,350
16,000 - 16,999	4,600
17,000 - 17,999	4,850
18,000 - 18,999	5,100
19,000 - 19,999	5,350
20,000 - 20,999	5,600
21,000 - 21,999	5,850
22,000 - 22,999	6,100
23,000 - 23,999	6,350
24,000 - 24,999	6,600
25,000 - 25,999	6,850
26,000 - 27,999	7,250
28,000 - 29,999	7,750
30,000 - 31,999	8,250
32,000 - 33,999	8,750
34,000 - 35,999	9,250
36,000 - 37,999	9,750
38,000 - 39,999	10,250
40,000 - 41,999	10,750
44,000 - 45,999	11,750
46,000 - 47,999	12,250
48,000 - 49,999	12,750
50,000 - 51,999	13,250
52,000 - 53,999	13,750
54,000 - 55,999	14,250
56,000 - 57,999	14,750
58,000 - 60,000	15,250

AN OVERVIEW OF PRESIDENT REAGAN'S REVOLUTIONARY TAX PLAN

The President's tax proposals "for fairness, growth and simplicity" may radically affect the way business is conducted. In particular, it is possible that significant tax burdens will be imposed on capital-intensive businesses. Should that be the case, the value of those businesses, their net income, dividend paying capacity and cash flow could be seriously impaired. At the same time, their ability to raise capital funds for modernizing their plant and equipment and maintaining and acheiving a competitive edge could likewise be seriously impaired.

All businesses will have to examine their fringe benefit and retirement programs, deferred compensation and executive compensation plans, life insurance programs, business entertainment and meals and perhaps even examine their very form of doing business since the maximum corporate and individual tax rates are intended to be brought close to one another.

These proposals contemplate that business taxes will be increased by about 25% while individual taxes, overall, will be reduced by about 7%. Please note, however, the business tax increase probably will not fall evenly on all businesses. Capital-intensive businesses, currently enjoying the greatest benefit under present law (ACRS, Investment Tax Credit, etc.) would seem to be the businesses that will be hardest hit under the new proposals. At the same time, it is possible, that because of the lower corporate income tax rates even capital-intensive businesses may wind up not paying substantially more in taxes.

It is evident from the foregoing, that should the President's proposals pass, very careful reevaluation of every business' present posture and its future plans will be required.

Let's get into some specifics of the President's proposals:

1. The tax corporate income tax rate would be decreased to 33% from 46%.

2. It is intended that the Investment Tax Credit be repealed entirely.

3. Depreciation write-offs would be made over longer periods of time.

4. There will be a 20% alternative minimum tax.

5. A "windfall tax" will be levied on those now benefiting from ACRS depreciation.

6. It is intended to eliminate the capital gain treatment on the sale of business property.

We shall outline below more detailed comments concerning each of the above items.

INVESTMENT TAX CREDIT

Should the Investment Tax Credit be repealed in its entirety, effective January 1, 1986, that still leaves planning possibilities for 1985. Needed and essential equipment can be purchased prior to the end of 1985 and we will still be able to utilize the Investment Tax Credit. Obviously, the decision to purchase the assets should not be dictated entirely by tax considerations but should have a solid, sound business purpose.

DEPRECIATION CHANGES

The President is proposing to eliminate ACRS and substitute something called the Capital Cost Recovery System. In general, this proposal tends to stretch out the length of time over which business and manufacturing equipment can be depreciated. However, part of the proposal includes a method to index future depreciation to inflation. Thus, although we may be required to depreciate the equipment over a longer period of time, we may also wind up actually depreciating more than 100% of the original cost of the equipment if inflation should increase the basis for depreciation.

CORPORATE ALTERNATIVE MINIMUM TAX

The current proposals contemplate a corporate alternate minimum tax computed by adding to regular taxable income certain preference items over $10,000, subtracting a threshold amount of $15,000 and making adjustments for operating loss carryovers attributable to preference items.

The alternative minimum tax picks up many preference items from the repealed add-on tax and adds some new ones. Here, again, great care must be given in planning financial transactions in order to take into account the impact of the alternative minimum tax.

THE "WINDFALL" TAX

Basically the concept here is to tax retroactively the benefits that businesses have received from using ACRS benefits between 1981 and 1985, inclusive.

The proposals are quite specfic indicating that 40 percent of excess depreciation taken after 1980 and before July 1, 1986 will be taxed over a 3 year period starting in 1986. In general, only taxpayers who claim substantial depreciation, $400,000 or more, would be affected and then it is proposed that there be an exemption of $300,000.

This proposal appears to be particularly difficult since there does not seem to be any way to avoid this "windfall" tax. Thus, many business cash flows could be seriously and adversely affected in 1986.

CAPITAL GAIN ON SALE OF BUSINESS PROPERTY ELIMINATED

Inflation adjusted gains or losses on depreciable business property would, under the new proposals, be treated as ordinary income or loss. The only item exempted from this treatment would be land used in a business (which is non-depreciable) and it is expected that land would retain the capital gain/ordinary loss benefit of current law. However, there is the distinct possibility that even land will no longer be afforded capital gain treatment.

There are many additional proposals, some much more favorable than the ones above. We list below the most important ones.

INVENTORIES

The proposals indicate that people using FIFO inventories will be able to index the inventories for inflation thus eliminating inflationary gains in inventory from tax. Those using LIFO would no longer have to conform their financial statements to their tax returns and thus could use FIFO for financial statement reporting but LIFO for tax reporting. Both proposals are obviously a plus.

DIVIDENDS PAID DEDUCTION

Most domestic corporations would be allowed a dividends paid deduction equal to 10% of dividends paid, provided the dividends were paid out of earnings subject to the regular income tax. This seems to be a small step toward the ultimate elimination of double taxation of corporate earnings, another plus.

SERVICE COMPANIES

Service companies with revenues over $5,000,000 annually may find themselves being forced to use the accrual method of accounting. This would probably apply to large law firms, large accounting firms and, possibly, some medical associations. While it is difficult to predict accurately the effect of the change to the accrual method, it is obvious that the Administration expects that this change will generate additional tax revenue.

REAL ESTATE

The real estate industry seems to be heading for difficult times. The President is proposing to stretch out the depreciation of real estate to 28 years from the current 18 years. This change, by itself, should have a serious effect on the value of real estate, decreasing it substantially. In addition, any gain on the sale of depreciable real estate may be taxed as ordinary income. This, also, should have a negative effect on the value of real property.

There are other, negative aspects of the proposal, such as the repeal of the rehabilitation tax credit, limiting losses in real estate investments to the amount at risk, and eliminating the use of tax exempt bonds to finance certain housing projects.

Until the real estate industry can react and adjust to these new conditions it is likely that the flow of funds to real estate projects will be drastically curtailed.

VACATION HOMES

The President has indicated that, on two fronts, the vacation home may be seriously attacked. First, he wants to eliminate the deduction of state and local taxes, including real estate taxes. Second, he proposes that, except for interest on a home mortgage which is the principal residence of the taxpayer, all other interest will be limited to $5,000 over the amount of investment income. Obviously, these proposals have a major impact on the acquisition of second or vacation homes by most taxpayers.

CAPITAL GAINS

The new proposals suggest that the maximum rate on capital gains be reduced to 17.5% from the current maximum rate of 20%. This represents a 12-1/2% reduction in the effective tax rate and could have some interesting effect in the stock market, making more attractive such things as start-up issues, high-tech issues, etc. It may also make it easier for issuers of securities to substitute equity financing for debt financing. Although the individual capital gains rate will decline to 17.5%, it is expected the corporate capital gains rate will remain unchanged at 28%.

BUSINESS ENTERTAINMENT

Under the President's plan, no deductions would be allowed for entertainment activity of any kind - including tickets for sporting events or the performing arts, the theater, ballet, opera, symphonies and orchestras. It would also eliminate deductions for entertainment facilities such as yachts, hunting lodges, and country clubs. Skyboxes, lounges, boxes or other similar arrangements fall into a similar category.

There is some question as to whether gifts, presently deductible up to $25 per donee, are affected by the President's proposals. If they are not, then it would appear that a business could still make a gift of tickets to a customer with a value not to exceed $25 and the cost of that would be deductible by the business purchasing the tickets.

The disallowance of entertainment expenses also could have significant impact on restaurants, night clubs, hotels, motels, convention centers, taxis and all forms of transportation.

The fall-out from this proposal is apt to be quite significant for almost every business.

The President further proposes to put a cap on the amount that can be spent for business meals, and to limit travel expense deductions, particularly those involved with some form of luxury transportation, such as cruises, even though, the purpose of the cruise is to provide a setting for seminars for the passengers on the ship. In connection with this, it appears that the Administration wants to eliminate all deductions for travel as a form of education.

BUSINESS LIFE INSURANCE AND ANNUITIES

Another significant proposal is that the cash build-up in life insurance policies and tax deferred annuities would be taxable on an annual basis to the policy holder. At present, such increases in the value of these policies are not taxable and provide an excellent method of accumulating funds tax free. If these proposals are passed the use of permanent life insurance in connection with a key man program or as an executive fringe benefit, or to fund stock redemption agreements, or deferred compensation programs are sure to be more costly and much less attractive.

We have outlined above what we see as the major proposals of the President's tax reform program. If these proposals are enacted into law, they will have a wide-ranging and far reaching impact on almost every business. While it is impossible to predict just what the Congress will do with regard to the President's proposals, the present feeling is that in one form or another most of the President's proposals will find their way into the tax law. You should be prepared to take a hard look at every single aspect of your business should these proposals become law.

Economic conditions of recent years have forced business managers to seize tighter control of their costing and pricing strategies. Even though industrial trends showed large printers relatively unaffected by recessionary pressures, the majority of medium to small printing firms were not as fortunate. These firms were ravaged by both inflationary and recessionary elements. We are now told that the economy is, once again, mending nicely. If that is so, the time is right for printing managers to take advantage of the situation by employing updated costing and pricing strategies.

REPLACEMENT COSTS

The average printer is spending approximately 37% of sales on material. Needless to say, printers cannot use yesterday's costs to determine today's pricing. Yet, while this simple statement may sound obvious, the fact remains that the majority of printers do calculate prices based on outdated costs.

With costs continuously changing, printers must be ready to update their costing and pricing systems. Furthermore, to price jobs profitably they must be able to anticipate what cost increases will be. Herein lies the problem. Determining exact figures for these costing components proves difficult. The NIFO (Next-In, First-Out) method for material costing insures that a printing firm's costs for a job will be reported so as to allow for adequate funds to replace the goods used to produce the work.

Using the NIFO method, if you were to cost a job which required paper purchased at 43 cents per pound; film at $1 per sheet; and plates at $5, you would look ahead to what the replacement cost of these materials will be before you cost and price the work. If today's prices indicate that paper has jumped to 48 cents; film to $1.50; and plates to $5.50, then these are the figures you would use to calculate both your costs and your final price.

Pricing and Costing Utilizing Replacement Values

	Original Purchase Price	Current Price To Replace
Paper	$0.43/lb.	$0.48/lb.
Film	$1.00	$1.50
Plates	$5.00	$5.50

According to NIFO, you cost and price at:

Paper	Film	Plates
$0.48	$1.50	$5.50

Remember, the purpose of your cost and accounting system is to give you a clear picture of the ongoing financial operations of your business. The more accurate this picture is, the more intelligently you can price your printed product. Any system that does not provide for the replacement of materials and supplies will dig directly into your profits on the job.

UPDATED HOURLY COST RATES

Another factor with tremendous impact on costing and pricing is hourly cost rates. These production cost calculations must be scrutinized at increasingly close intervals as your costs of doing business climb.

Since the foundation of budgeted hourly rates is an analysis of current operating expenses and anticipation of increased expenses, profitable and competitive rates need to be continuously reviewed in order to achieve an acceptable income and return on investment.

INCREASED PRODUCTIVITY

Although the pace of increasing costs has slowed, the printer must still find a way to maintain a competitive edge. Printers should take a close look at how improving productivity will lower the cost per unit and thus allow them to keep their pricing at competitive levels. Innovations are available in both management and technology that can give a big boost to productivity. Printers who do not keep pace with these innovations may well find higher costs driving them out of competition.

If your cost per hour of production is, say, $40 and you produce 5,000 units per hour, then your costs are $8 for each 1,000 units. With advances in technology, it may be possible to lower the cost per unit and gain a competitive edge in the market. A $1 per thousand decrease in costs may make the difference on a large sale. Units produced can be improved. It is a rare (or not truthful) printer who can honestly say he cannot increase units produced per hour. A boost of 714 units produced each hour would lower the cost per unit to $7 per thousand. Even though this entire increase in productivity may be unachievable, it is remarkable how much productivity can be increased if you set your goal and keep to it.

Increased Productivity Keeps Cost Per Unit Down

	Cost Per Hour ($'s)	Units Produced (Per Hour)	Cost Per Unit ($'s/M)
Base	40.00	5,000	8.00
714 Unit Per Hour Increase	40.00	5,714	7.00

To implement this increase in units produced per hour may involve the purchase of new technology, a production improvement program or merely an investment in higher quality materials. But often the increase can be instituted without any added capital at all.

Printers today must be ready to investigate all and any avenues that might lead to increased productivity. By doing so, they will be better prepared to maintain their customer base and possibly gain a larger share of the market. Tight controls must be maintained in all aspects of the business to help keep costs in line. Accounting systems must insure that all costs are reported and that costs and prices are geared to the continuation of healthy operations. Then, printing firms should be able to effectively compete and achieve higher levels of profitability.

HOW DO YOU COMPARE IN NORTH AMERICA?

The Individual Company Computer Printout is a fundamental part of the PIA Financial Ratio Study. It is a detailed, well-organized presentation of key financial information that encompasses every facet of your printing business. It contains data specific to your company that are not available in the published volumes of the study. The Individual Company Computer Printout, designed with you, the busy printing executive in mind, is a concise presentation of:

- Your firm's operating statement;
- Your firm's balance sheet;
- Supporting schedules for your firm's income statement and balance sheet; and
- Your firm's Return on Investment.

In addition:

- Your firm's financial data are expressed in dollars and ratio form;
- The ratios of your printing firm are compared side by side with the ratios of all other ratio study participants and "profit leaders," based on both sales revenue and value added. Ratios of survey participants and "profit leaders" that produce the same products and use the same manufacturing process are also presented for your immediate comparison;
- Using the same presentation format described in the previous item, the ratios of your printing firm are also compared side by side with the ratios of all survey participants and "profit leaders" that are approximately the same size in terms of sales; and
- Finally, "significant facts" statistics are presented to help you gauge where your company stands relative to industry "profit leaders" and the U.S. and Canadian printing industries as a whole.

Because of the detail that the Individual Company Computer Printout contains, it can quickly help you identify those areas and operations of your business that are running efficiently and those that are not. You'll be able to ascertain the seriousness of problems and how much corrective action is necessary. The bottom line is that you can purchase all of these data for a small fraction of what you would have to pay if you generated a similar analysis from scratch.

If you are part of the 1985 database, and have not already done so, I urge you to make the investment. If you are not part of the database, please consider participating in the 1986 PIA Financial Ratio Study and availing yourself of this particular service.